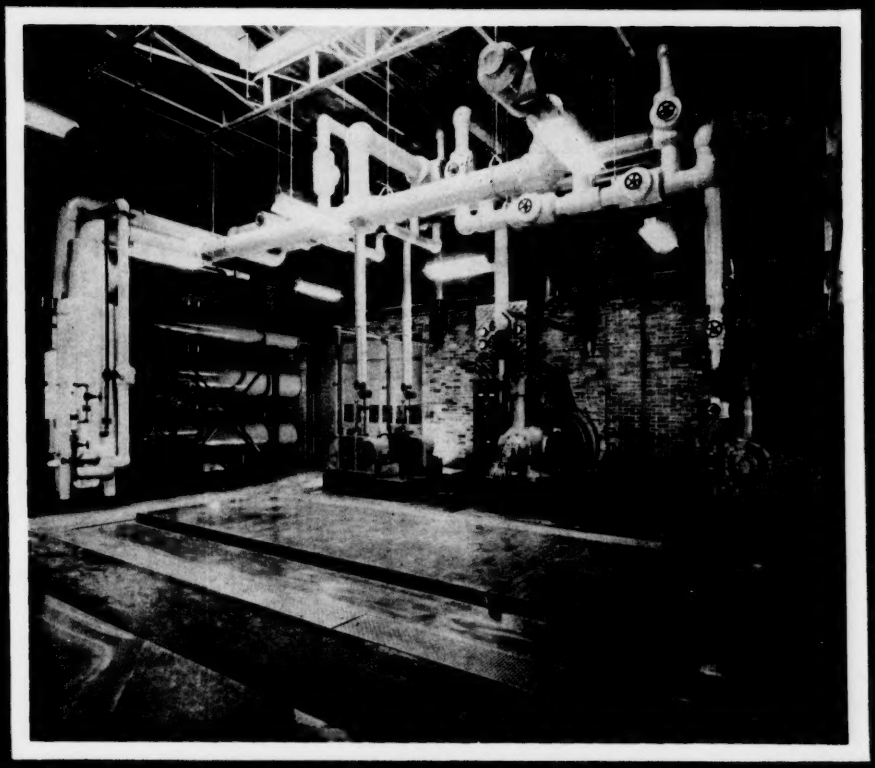
# ICE and REFRIGERATION



Big ice market among users of mechanicals . . . . page 31

JULY • 1950

100th anniversary of first ice making machine . . . page 19

# REDUCE COMPRESSOR MAINTENANCE COSTS

## keep refrigerating compressors clean by lubricating with TEXACO CAPELLA OILS

A CLEAN compressor assures more tons of refrigeration per dollar . . . and *Texaco Capella Oils* assure clean compressors. These are highly refined oils, designed especially for refrigerating compressor lubrication . . . moisture-free, with very low pour tests, and non-reactive with refrigerants.

*Texaco Capella Oils* are unsurpassed for stability . . . with exceptional resistance to oxidation, sludge and gum formations. They stand up under severe operating conditions and assure clean-running compressors . . . high efficiency and low maintenance costs.

There are *Texaco Capella Oils* in every needed viscosity . . . and your Texaco Lubrication Engineer will gladly help you select the right ones to assure best performance from your compressors. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

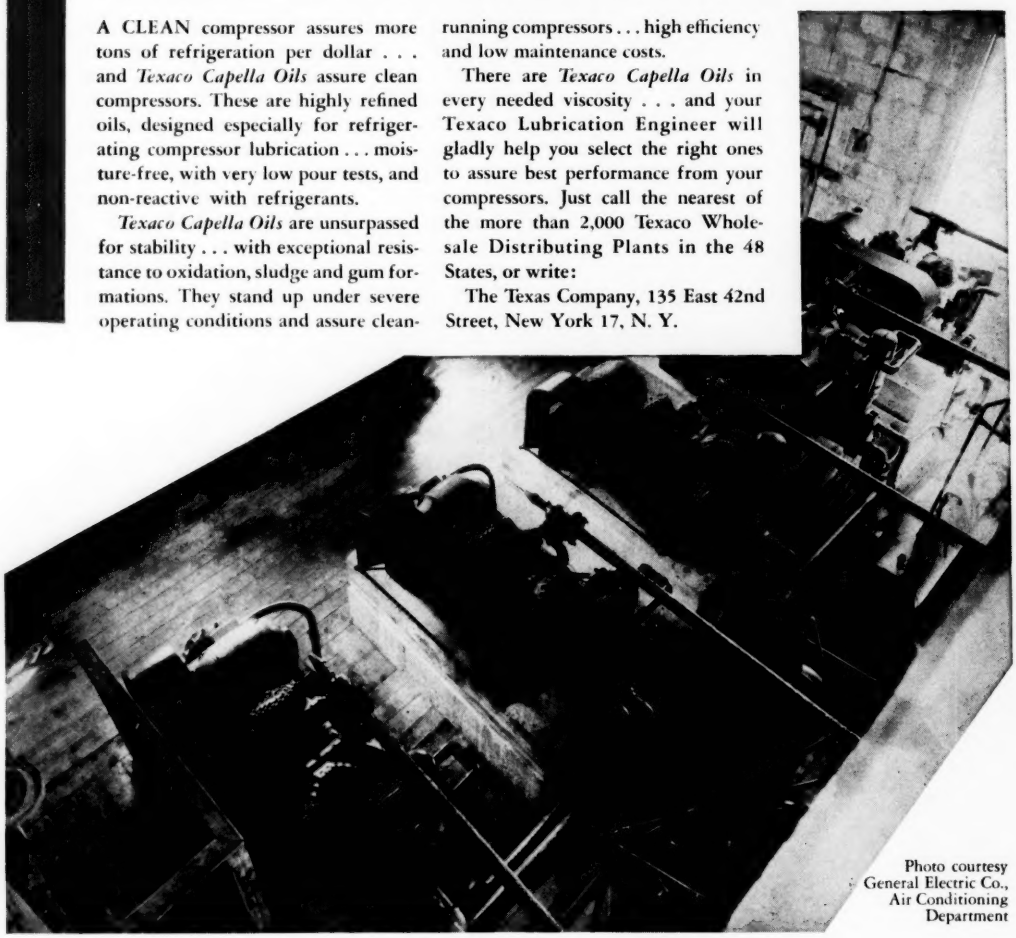


Photo courtesy General Electric Co., Air Conditioning Department

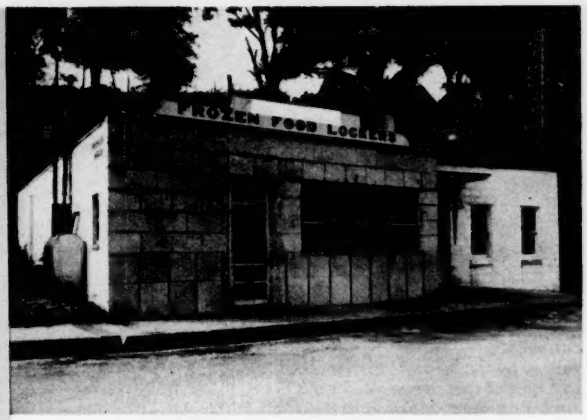
**TEXACO Capella Oils**

**FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT**

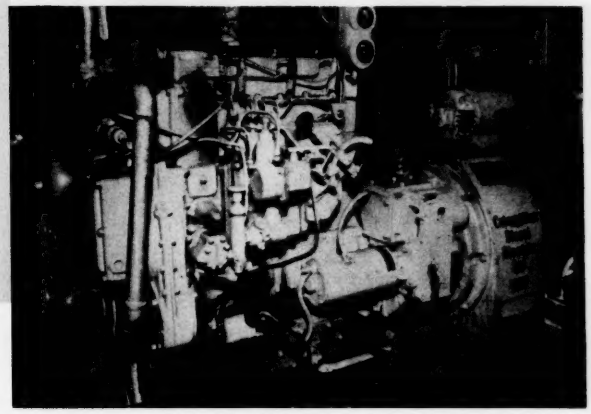
TEXACO

# Storms can't stop this power...

## AND IT SAVES $100 A MONTH!




*This "Cat" Diesel D3400 Electric Set provides power for the entire plant of Ellsworth Frozen Food Lockers, East Ellsworth, Wisconsin.*



WANT to save yourself money and worry? Just follow the lead of Mr. Jerome Theis, of Ellsworth Frozen Food Lockers, a 640-unit plant in East Ellsworth, Wisconsin. Let's hear from him: "The company we took over had a 'Cat' D3400 Electric Set that had operated for 18,000 hours with no major repairs and no stoppages. We are well satisfied with our D3400. It is very economical on fuel. And it saves us a good $100 a month on our electric bill."

Reports like this come from all over the country about "Caterpillar" Diesel self-regulated Electric Sets. You need no special training to operate them. There's no switchgear, no voltage regulator. They save you money, running without fouling on low-cost fuels. And they save you worry, working right through outside power failures. Service, too, is competent and prompt—your "Caterpillar" dealer is on call 24 hours a day.

Whatever your power needs, there's a "Caterpillar" unit to fit them profitably. Self-regulated Electric Sets range up to 100 kw.—externally regulated sets to 314 kw. Ask your "Caterpillar" dealer to show you how they are built to make money for you!

**CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS**

### LOOK UNDER THE HIDE

Fuel pumps are "Caterpillar"-designed and "Caterpillar"-built. Made of the cleanest high-chromium, high-carbon alloy steel obtainable, pump plungers and barrels are diamond lapped. Pumps are heat treated to maximum hardness to give users thousands of hours of trouble-free economical service. There is an individual pump for each cylinder. Pumps are adjustment-free and completely interchangeable. Look under the hide for quality. It doesn't show on the outside — it shows up in performance.

# CATERPILLAR

REG. U. S. PAT. OFF.

**DIESEL ENGINES • TRACTORS**
**MOTOR GRADERS • EARTHMOVING EQUIPMENT**

This
"Largest of its kind"
AIR CONDITIONING SYSTEM
checks corrosion with

# BYERS WROUGHT IRON PIPE

Said to be the largest job of its kind, and one of the largest office building installations in the country, the air conditioning in this Oklahoma City building is safeguarded against corrosion by Byers Wrought Iron pipe.

Chilled water lines, recirculating water lines, and condensed water lines all utilize this time-proven material. This 1350-ton absorption-type refrigeration equipment is located in a pent-house on the 14th floor roof of one of the wings. Chilled water lines are carried on bridges across areaways. Design contemplates the use of 45° F. water.

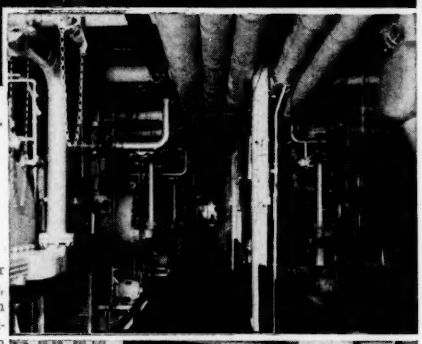
The Southwest has been a leader in the use of air conditioning equipment, and it is interesting to note how widely engineers have forestalled corrosive attack by using Byers Wrought Iron. Since the cost of even minor repairs is bound to be high, this use of wrought iron is a definite economy measure.

Wrought iron owes its ability to combat corrosion to its unusual composition and structure. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, act like a series of baffles, to halt and disperse corrosive attack. The fibers also anchor the initial protective scale, which shields the underlying metal. In cases where galvanizing is used, the naturally rougher surface of wrought iron takes and retains a heavier coating of spelter.

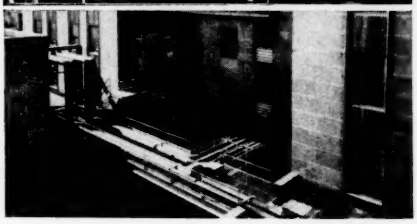
With air conditioning becoming a "must" in new office building construction in many sections, you may be interested in the information contained in our bulletin WROUGHT IRON FOR REFRIGERATION AND AIR CONDITIONING INSTALLATIONS. We will be glad to send you a copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

First National Bank Building,
*Oklahoma City, Oklahoma.*
Sorey, Hill and Sorey and
Ira G. Howlett, *Architects.*
Spaeth Engineering Company,
*Piping Contractors.*



Equipment room. Chilled water lines, Condensed water lines, Steam supply lines, and Steam returns—exposed and under grating—are all Byers Wrought Iron pipe.



Bridges carry wrought iron chilled water lines from wing to wing, solving space problems.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

Ice and Refrigeration

VOLUME 119 NUMBER 1

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# *July 1950*
# CONTENTS

**Cover Story: Ten Million Pound Freezer** ..... 58

**Gorrie—Pioneer Ice Maker** ..... 19
One hundred years ago, Dr. John Gorrie of Appalachicola, Fla. was awarded a patent for the first American ice-making machine

**Air Conditioning and Refrigeration Machinery Association Holds Annual Meeting** ..... 22
Climax of year's highly successful operations in association activities—meeting held May 28

**Better Seafoods—More Buyers** ..... 23
Dr. H. C. Diehl says greater consumption of seafoods by more people is possible

**Packing Plant Adds Freezer** ..... 27
John Morrell & Co. opens freezer addition to Los Angeles branch providing two-thirds more floor space

## The Ice Industry

**Wage Hour Act Now Under Secretary of Labor** ..... 29
**Do Mechanical Owners Use Ice?** ..... 31
**Ice Day in Texas Sells 1,000 Appliances** ..... 37
**Reports from Unit Ice Associations** ..... 39

## Practical Refrigerating Engineer

**Frost Heaving Damages Freezer Floors** ..... 41
**The N.A.P.R.E. Question Box** ..... 45
**News Notes and Activities of Chapters** ..... 46

## Refrigerated Warehousing Industry

**Warehousemen Protest New Lending Scheme** ..... 49
**Pacific States Warehousemen Annual Meeting** ..... 53
**Cold Storage Holdings** ..... 55
**Ten Million Pound Freezer** ..... 58

## Frozen Foods

**Storage of Frozen Cooked Poultry and Vegetables** ..... 60
**Frozen Food Convention Announces Western Tour** ..... 60

## Departments

**Book Reviews** ..... 66
**Convention Calendar** ..... 68
**Association Directory** ..... 68
**New Plants** ..... 70
**Deaths** ..... 72
**What's New** ..... 74
**Catalogs and Bulletins** ..... 78
**Manufacturers' News** ..... 78

**BUYERS GUIDE 80** **ADVERTISERS INDEX 88**

# The *DEMAND* Is for QUALITY ICE

## For Ice That Will Not Produce Slime In Ice Boxes...

## Use DISTILEX This Way...

*Dispense with Soda Ash, Sodium Aluminate, Alum and Similar Products . . . and*

**SIMPLY MIX DISTILEX WITH THE LIME YOU ARE NOW USING!**

Block on left treated with Distilex, only one core emptied. Right, untreated water, cores were emptied twice. Most Distilex users do not empty cores at all

***RESULT . . . .*** High-grade Crystal Ice from raw water . . . Ice free from slime and deposits . . . Ice without color, odor, taste . . . Ice which can be produced at very low temperature* with no cracking while being frozen, dumped or cut.

*DISTILEX treated water can make Ice in LESS THAN 25 HOURS at 10° brine temperature!

**Test DISTILEX in your plant. If not entirely satisfied, purchase price will be refunded on all DISTILEX returned. $25.00 per 100 lbs., f.o.b. Birmingham.**

## Use SOLVEX for COMPRESSOR COOLING SYSTEMS

HIGH HEAD PRESSURES QUICKLY LOWERED with this remarkable chemical. SOLVEX can be quickly applied without breaking a joint. REMOVES RUST, SCALE, ALGAE, OIL AND ENCRUSTING MATTER from condenser tubes and water jackets in one to five days operation. Ideal for cleaning scale and corrosion from boilers, heaters and tanks.

An effective conditioner for spray ponds and cooling towers. SOLVEX goes to work immediately WITHOUT COSTLY SHUTDOWNS. Cooling efficiency is rapidly restored by using one pound per 10 gallons of water.

**Write NOW for Further Particulars on These MONEY-SAVING AIDS TO BETTER ICE MAKING!**

**The CSCO STABLEIZER MAINTAINS GOOD BRINE by a positive reaction to either OVER-ACIDITY or OVER-ALKALINITY!**

A scientific combination of pure metals upon which damaging materials in brine will "feed" in preference to the brine tank or ice cans, thereby SAVING them!

the CSCO STABLEIZER removes destructive material from the brine without adding harmful chemicals. Easily installed in all systems. No other brine treatment compares in SAFETY! The STABLEIZER does not make brine harmful to workmen's hands. PROTECTS AND PRESERVES EXPENSIVE EQUIPMENT!

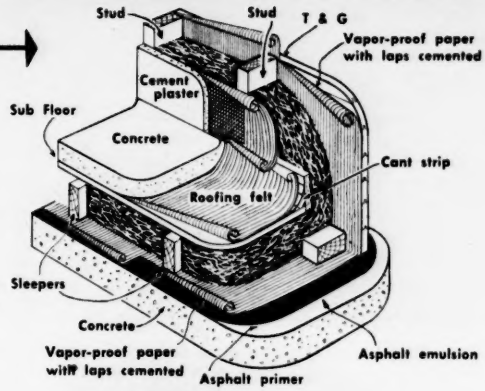
## CHEMICAL SOLVENT COMPANY

**3005—16th Street North** **Birmingham, Ala.**

INSTALLATION FILE NO. 1007

# How to get maximum efficiency with PALCO INSULATION WOOL

## Recommended




**LOW TEMPERATURE INSULATION OF PLASTERED WALL AND CONCRETE FLOOR** -- Existing concrete floor should be thoroughly brushed and cleaned, then vapor-proofed with asphalt primer, asphalt emulsion, and vapor-proof paper. Four-inch laps should be cemented with asphalt emulsion. Vapor-proof paper should continue under wall plate and up face of exterior wall. Light asphalt felt should be installed over sub-floor and back of metal lath for moisture protection during pouring of concrete and application of plaster. PALCO WOOL INSULATION is placed as application of lathing progresses, or installed in entire wall before lath is applied.

## Applied

**MILWAUKEE GERMANTOWN BREWERY, MILWAUKEE, WISCONSIN** -- Illustrates simplicity of PALCO WOOL installation. Thermal conductivity of only .255 B.t.u. makes PALCO WOOL one of the most efficient insulations known. It is ideal for all food storage applications, as it is non-settling, odorless and odor-proof, moisture resistant, vermin repellent -- with the added safety factor of flame-proofed protection.

WOOL · NATURE'S INSULATION · FROM AGE-OLD REDWOOD BARK · FLAMEPROOFED

**Mail attached coupon today for more detailed information.**

**THE PACIFIC LUMBER COMPANY**
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35 EAST WACKER DRIVE, CHICAGO 1, ILLINOIS

**THE PACIFIC LUMBER COMPANY**
**100 BUSH STREET**
**SAN FRANCISCO 4, CALIFORNIA**

Please send me without obligation:

- ☐ PALCO WOOL COLD STORAGE MANUAL
- ☐ LOCKER PLANT PLAN AND CONSTRUCTION MANUAL

Name _____
Title _____
Company _____
Street _____
City _____ Zone _____ State _____

007-IR

# ROCKY MOUNT, N. C., HAS MODEL "AUTOMATIC" ICE PLANT

Rocky Mount is one of the fastest growing towns in eastern North Carolina. It is on both U. S. Highway 301 and the Atlantic Coast Line R.R., which carry much of the Florida traffic.

Here the Tar River Ice Company has built a new plant of 30 to 33 tons capacity. The building measures 65 by 85 feet, and has a large apron for parking. The construction is very substantial and attractive.

The brine tank has 400 Frick-Knickerbocker ALL-WELDED ice cans, which are handled four at a time by grids. The three 6 by 6 compressors discharge into evaporative condensers.

Automatic control equipment is installed to save hand labor wherever practicable, the compressors being started and stopped by thermostats in the brine tank. The ice is pulled in either one or two shifts, as occasion demands. Considerable trade is expected in the icing of trucks. The ice is scored or crushed and packaged, as desired. The storage capacity is ample for holding 60 tons.

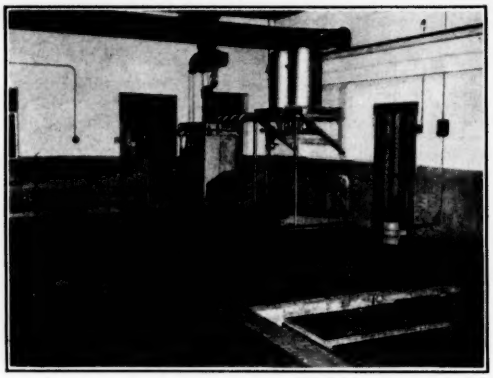
Another example of a new ice plant, Frick-designed and Frick-equipped, that is a model of its kind. Let us quote now on the refrigerating and ice-making machinery you need.

DEPENDABLE REFRIGERATION SINCE 1882

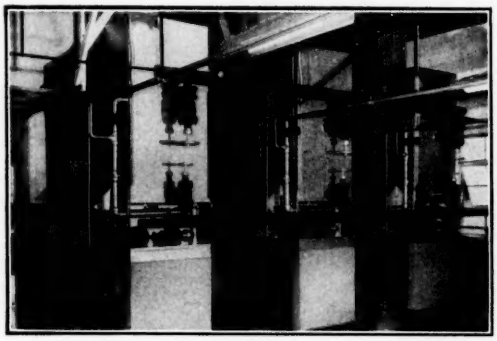
FRICK CO.

WAYNESBORO, PENNA. U.S.A.

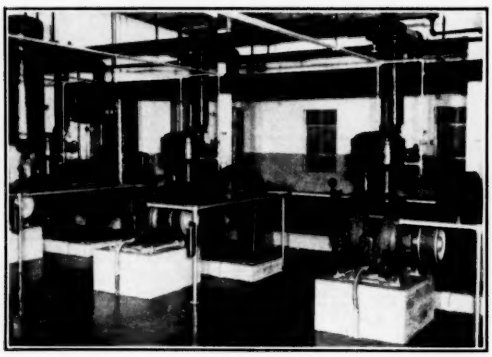
Also Builders of Power Farming and Sawmill Machinery.



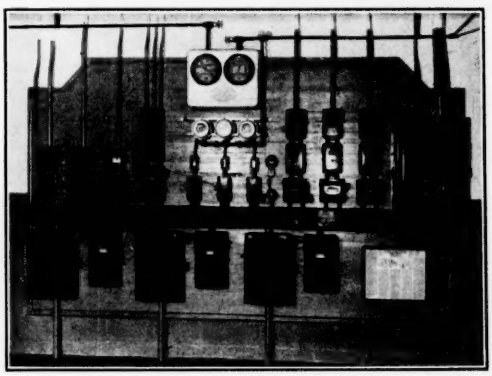
Four ALL-WELDED Ice Cans are Harvested at a Time, Using Frick Grids.



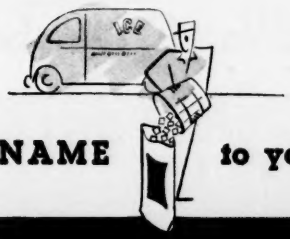
These Evaporative Condensers Keep Head Pressures Within Reason, and Save Water.



Three 6 by 6 Compressors under Automatic Control Make 30-33 Tons of Ice Daily.



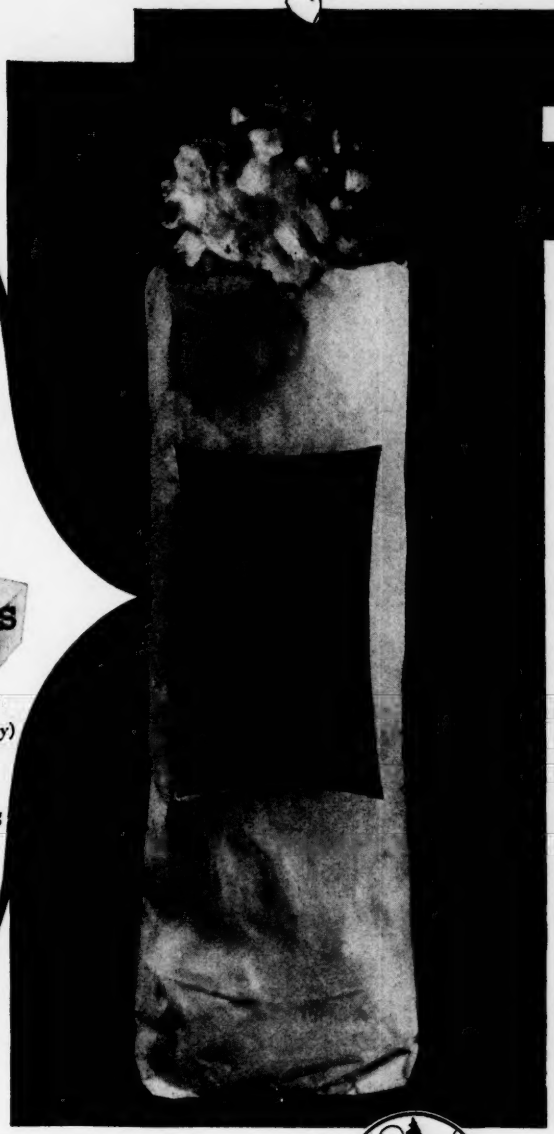
The Switchboard at Tar River Ice Co. is Unusually Complete.

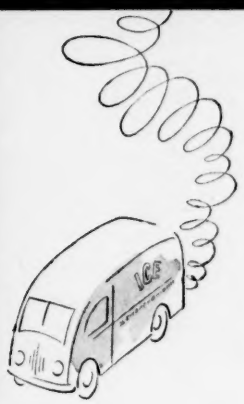



**SIGN YOUR NAME** to your good service with...

- *bursting*
- *leaking*
- *spilling out*
- *melting*
- *waste*
- *dirt*

- *strong (wet or dry)*
- *sturdy*
- *sanitary*
- *surfaced for printing*
- *light weight*
- *easy to store*






Do right by your product! Deliver it in International Ice Bags printed with *your* name and advertising message!

That's the easiest, most economical way to keep your product and service sold—

Printed bags "TELL" and "SELL."

**INTERNATIONAL PAPER COMPANY**

*SOUTHERN KRAFT DIVISION* — *NEW YORK · CHICAGO*

# *Martocello* QUALITY

**OUR PRODUCTS ARE MANUFACTURED FROM THE FINEST MATERIALS AND DESIGNED TO GIVE LONGER AND MORE EFFICIENT OPERATION**

*compare their* **QUALITY** *and* **WORKMANSHIP** *with all others and satisfy yourself that they are the very best*

## COMPLETE AIR AGITATION SYSTEMS AND ICE PLANTS

**"HELPFUL SUGGESTIONS"**

"Leaks in Ice Cans cause white ice. As they grow in size, the longer they retard freezing and reduce plant efficiency. The presence of these leaks is always revealed by long twining cavities or air spaces (caused by either sodium or calcium) running from the bottom corners of the Cans into the center of the white ice core. As the leaks become worse, the cavities grow correspondingly until, finally, the entire block turns opaque. When these leaks are observed at all four bottom corners and the twining cavities or air spaces take the diameter of a lead pencil, the Cans should be either repaired or replaced immediately."

REPRESENTED ON THE WEST COAST BY WESTERN ICE EQUIPMENT CO., 420 MARKET ST., SAN FRANCISCO, CALIF.

## JOS. A. MARTOCELLO & CO.

**229-231 North 13th Street** **Philadelphia, 7, Pa.**

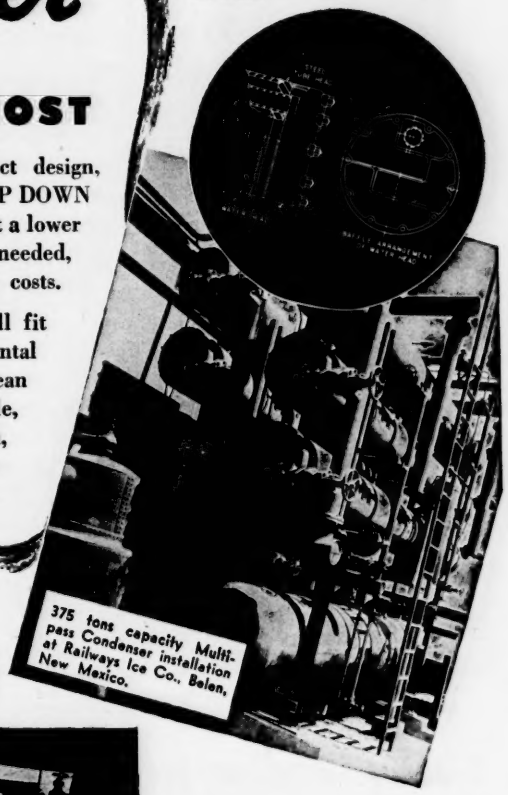
# $ave Power and REFRIGERATION COST

Vogt Condensers, because of their correct design, STEP UP the rate of heat transfer and STEP DOWN head pressures. With the liquid delivered at a lower temperature, smaller compressor capacity is needed, saving in original as well as operating costs.

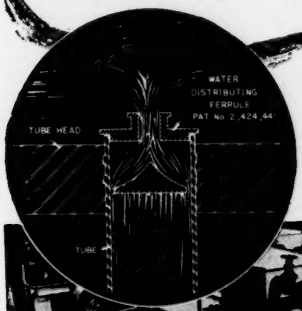
One of the two basic types illustrated will fit your operations exactly. Install Horizontal Multipass (closed type) for use with clean waters. Where the water is hard, forms scale, contains mud or promotes fungus growth, Vertical Single Pass (film type) which can be cleaned in operation, are recommended.

**Horizontal Multipass Condensers**
(Closed Type)

Water circulated in tubes traverses the length of the unit a number of times as determined by baffles in the heads.



375 tons capacity Multipass Condenser installation at Railways Ice Co., Belen, New Mexico.




**Vertical Single Pass Condensers**
(Film Type)

Patented ferrules give equal distribution of water to and over the surfaces of all tubes in a unit.

Battery of eight 42"x 16'-0" Vertical, Single Pass, Condensers at Armour and Company, National Stockyards, Illinois.

## HORIZONTAL and VERTICAL TYPES SHELL and TUBE CONDENSERS For Every Service

*Write For Bulletin RC-1*

**HENRY VOGT MACHINE COMPANY**
INCORPORATED
1000 W. ORMSBY ST., LOUISVILLE 10, KY., U.S.A.
Branch Offices: NEW YORK, CHICAGO, CLEVELAND, DALLAS, PHILADELPHIA, ST. LOUIS, CHARLESTON, W. VA.

# Vogt REFRIGERATION CONDENSERS

# "Our sanitary standards demand Packaged Processed Ice"

SAYS JOSEPH J. HACK, JR. OWNER-MANAGER, WESTLEIGH INN, LITCHFIELD, CONN.

**The Westleigh Inn** is one of the top-flight inns of New England. And the village of Litchfield, ten miles from the nearest railroad station and 33 miles from Hartford, is a "storybook" New England village.

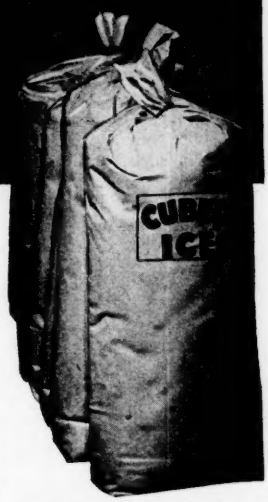
## Why Leading Ice Companies Are Switching to One-Trip Ice Bags

IT'S EASIER to sell processed ice to big volume users such as restaurants and food markets when you pack it in one-trip paper bags that lock out dirt and contamination.

For sanitation is the Number 1 concern of all who sell food . . . so vital that some prefer to invest in expensive, ice-making equipment rather than take a chance with nonpackaged ice.

And think of the extra advantages for you! Consumers ice more often with convenient-sized, easy-to-handle Union Paper Ice Bags. They're easily carried, and so speed up handling on the platform, in loading and at the delivery point. And the double layer of Union wet-strength paper acts as an insulator to retard melting.

A revolutionary idea not so many months ago, Union Paper Ice Bags are now used by hundreds of ice companies. Write for further information and free samples.



**Wet-Strength Paper Ice Bags** have tremendous strength even when soaking wet . . . thanks to a water repellent resin that binds the fibres of the paper firmly together.

ONE TRIP

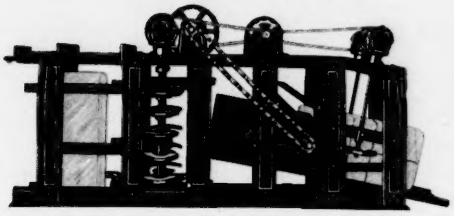
# UNION Paper Ice Bags

**A product of the UNION BAG & PAPER CORPORATION • Woolworth Bldg., New York 7, N. Y.**

*Bags of Kraft, Transparent Films, Waxed Paper, Glassine, Laminates*

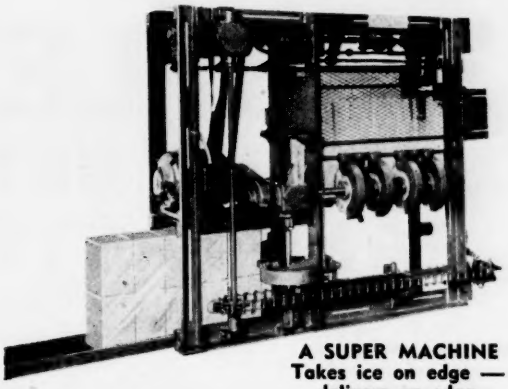
# Ready TO SERVE YOU NOW...

## PERFECTION REGULAR



Take ice on end, delivers on edge

## PERFECTION MILLER



**A SUPER MACHINE**
Takes ice on edge — delivers on edge.

## PERFECTION CONVEYOR SPECIAL

Unscored ice enters machine automatically from transfer conveyor.

***Start the 1950 Season Right***

***use a PERFECTION***

**Save the Difference**

## *With Inlet and Curved Outlet Conveyor-3 Machines in One*

**Takes ice on edge, delivers on end—Right or left hand curved conveyor available**

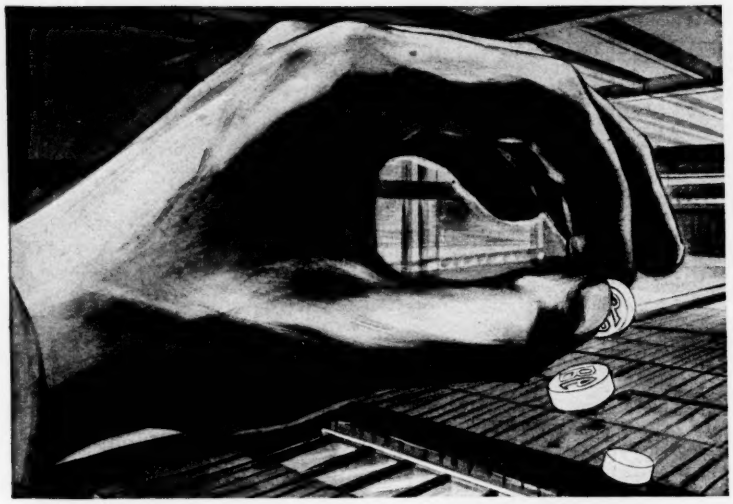
**REPAIR PARTS ALWAYS AVAILABLE FOR IMMEDIATE SHIPMENT**

*Perfection*

1. A Scoring Machine
2. A Heading Machine
3. A Conveyor

The only unit on the market today that does all 3 operations in one.

**PERFECTION ICE SCORING MACHINE CO.**
**P.O. Box 2140 Phone 3-1258 Fort Worth 1, Texas**



# TEMPLETS
## MAKE ICE BETTER AND FASTER

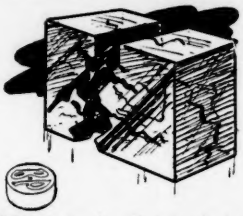
Here's a little thing . . . that makes a *big* difference in your ice production! 2 or 3 Templets tossed into each ice can do the trick. Your same plant, your same equipment can now produce BETTER looking, better handling merchandise. It can produce a greater quantity per working day. Yet, Templets are comprised of ordinary, harmless chemicals that do not affect taste or purity. Send the coupon in today. See for yourself how these little tablets work "like magic"!

TAMPLETS are being used in Ice Plants throughout the United States and in many Foreign Countries.

### FREEZE FASTER!

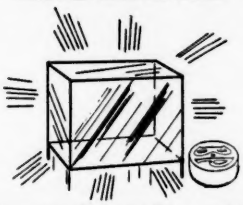
Time is money . . . and especially so when you can manufacture more, handle more, sell more in LESS TIME! Try Templets. You can operate your brine tanks at *lower* temperature with beautiful results.

### IMPROVE TEMPER!



TEMPLETS make ice that tends to cleave properly . . . stop shattering and "bad breaks." This is a big help in speeding your handling and cutting, especially with inexperienced men. It prevents waste, too.

### HAVE CLEAR ICE!



eye-appeal counts! So . . . while you're at it, why not produce ice that's beautifully crystal clear! Try Templets and SEE!

PRESCRIPTION

℞ TEMPLETS

For sick ice, 3 in water as many times daily as needed

**BARADA & PAGE, Inc.**
**Guinotte & Michigan Avenues**
**Kansas City 1, Mo.**

Please send complete information on *Templets*. Also trial sample.

Name .....

Plant .....

Street .....

City and State.....

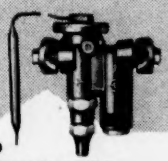
# *This Trademark on Your Ammonia Controls Means More Profit on Your Ledgers*

Month after month, countless profit dollars trickle away unnoticed through leaky, outworn valves that waste refrigeration and power—run up unnecessary maintenance bills.

Plug those profit leaks right now! Replace your over-age valves with accurate, fast-acting ALCO Ammonia Controls. Get every last ounce of freezing capacity from your plant—and watch those sturdy, dependable ALCO controls slash your upkeep costs!

***EVAPORATOR PRESSURE REGULATORS—***

3½ to 200 tons. Pilot operated for high sensitivity. Simple cage construction. Assure close control of evaporator pressures in cold storage rooms, chill rooms, water chillers, etc.



***THERMO EXPANSION VALVES—***

Up to 125 tons capacity. Rugged "come-apart" construction, few moving parts. For any type of evaporator bare pipe coils, blower coils, or chiller.

***SOLENOID VALVES***

Liquid: 10 to 172 tons; Suction: 2.7 to 28 tons. Flanged semi-steel bodies. Heavy duty coils designed for continuous operation. Use wherever positive stop service is needed.

25 A QUARTER-CENTURY OF PIONEERING PROGRESS

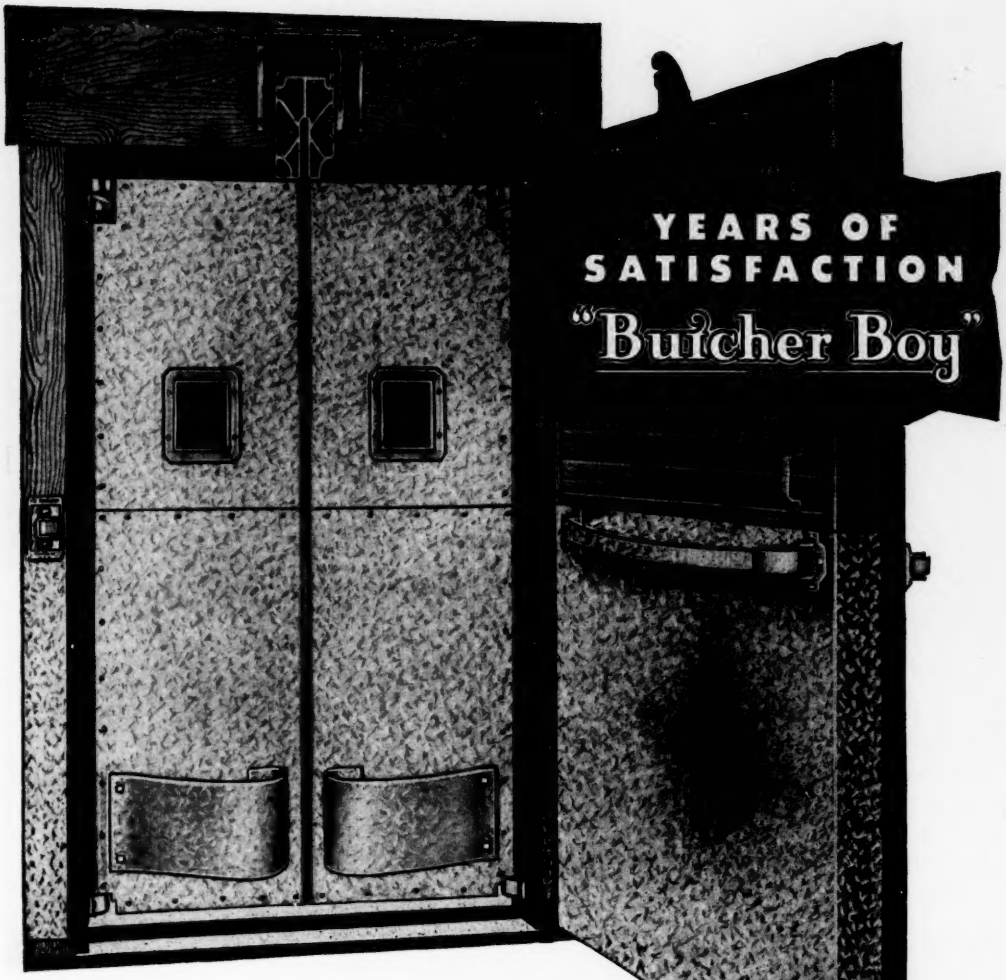
**ALCO VALVE CO.**

835 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches.

**SEE YOUR ALCO WHOLESALER**

4277



YEARS OF SATISFACTION

"Butcher Boy"

"BUTCHER BOY" is the preferred cold storage door of the industry, because it has ALWAYS met every conceivable challenge of hard usage. The strong, massive construction of Butcher Boy doors is the result of "controlled quality" production — a guarantee that they will meet every rigid test of required performance.

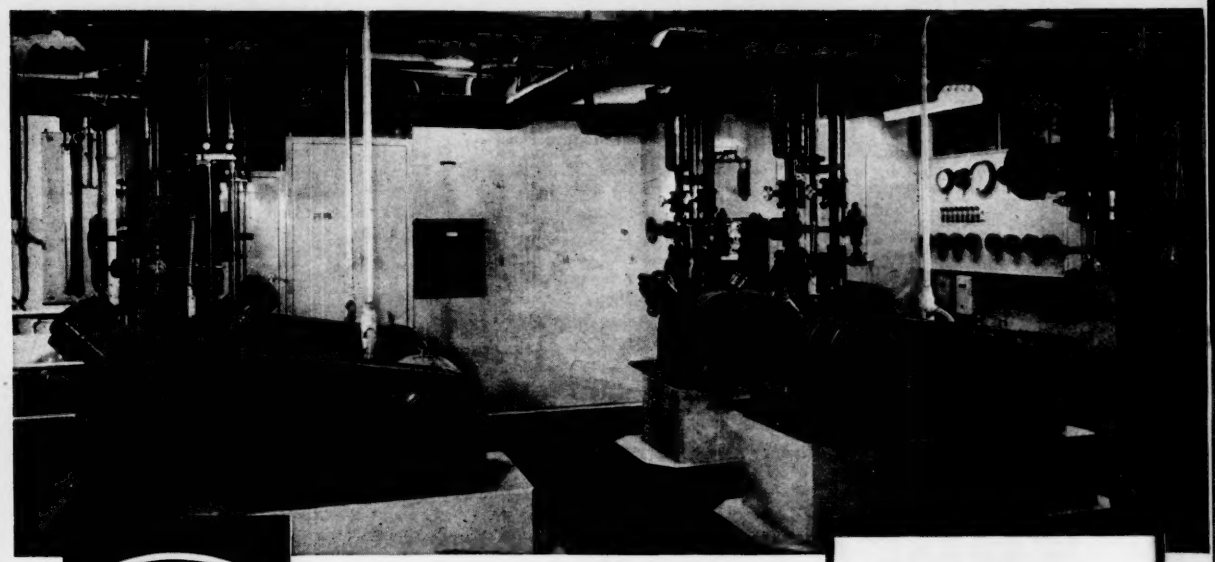
Time tested heavy duty hardware applications, PLUS prime insulation, PLUS 100% Douglas Fir Construction is a resultant product equalled by none — BUTCHER BOY. Write for free bulletins today.

VESTIBULE-TYPE TRACK DOOR

**BUTCHER BOY COLD STORAGE DOOR CO.**

**170 N. SANGAMON ST., CHICAGO 7, U. S. A.**

# Refrigeration Teamwork Pays Off



## Multi-Cylinder Booster System Cuts Costs *Automatically*

## *at* GOLDEN STATE COMPANY, LTD.

**SAN FRANCISCO STORAGE PLANT**

*Two pairs of Creamery Package Type K boosters and second stage compressors and Intercooler at Golden State's San Francisco storage plant operate entirely automatically—save time, power and space.*

Here is the newest in super-efficient refrigeration to meet *big* and *complex* requirements. The system was conceived and designed by the engineering department of Golden State Company, Ltd., in cooperation with CP engineers. Results achieved have fully realized expectations. (See adjoining column.)

This system is a good example of what happens when top-flight engineering calls upon CP's decades of experience to achieve more efficient, lower cost refrigeration.

For effective execution of a new refrigeration program—or improvement of existing facilities—teamwork with CP Engineers pays off! Check with CP now!

### ANOTHER EXAMPLE OF CP COOPERATIVE ENGINEERING RESULTS

To the long list of notable achievements of CP cooperative engineering, add this one:

Provision of a complete and fully automatic refrigeration system at Golden State's San Francisco storage plant for 10 huge freezer and chill rooms —almost 11,000 square feet in area —with temperatures maintained at various levels ranging from 5 to 15 degrees below zero. So efficient is the system that *compressor operating time has been cut in half* . . . and manual attendance reduced to such routine chores as oiling.

**Most Advanced System**

The system is the most advanced available for low temperature storage.

Each pair of CP Boosters and 2nd Stage Compressors requires less horsepower than one single stage compressor large enough to handle the equivalent load. Eighty connected horsepower are doing the work that formerly required 110—and doing it better.

**Automatic Electric Control**

The electrical circuit system designed by CP and Golden State Engineers establishes an automatic sequence of operation that can be adjusted to time intervals up to 15 minutes.

Mercury switches stop and start compressors—control high pressure cut-out in case of water failure—oil failure or other difficulty.

Time delay switches—relay-controlled—function at 1½ minute intervals, during which oil pressure is built up. They then complete the circuit to magnetic switches governing operation of each compressor.

THE *Creamery Package* MFG. COMPANY

***General and Export Offices:* 1243 W. Washington Blvd., Chicago 7, Illinois**

Atlanta • Boston • Buffalo • Chicago • Dallas • Denver • Houston • Kansas City, Mo. • Los Angeles • Minneapolis • Nashville • New York • Omaha • Philadelphia • Portland, Ore. • St. Louis • Salt Lake City • San Francisco • Seattle • Toledo, Ohio • Waterloo, Ia.

CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.
267 King St., West Toronto 2, Ontario

THE CREAMERY PACKAGE MFG. COMPANY, LTD.
Avery House, Clerkenwell Green, London, England

SHORTER

THERE ARE ONLY THIRTY INCHES from the heel of fork to the back of this Ride-A-Type truck, yet plenty of foot room on the platform. Platform is rounded for shorter turning radius.

EASIEST CONTROL

EASY GRIP ROLLER TYPE HANDLE for two speeds forward and two speeds reverse. Push button in end of handle operates the lifting mechanism. Valve is mounted on pump and oil tank for cushion or speedy lowering.

POWER

18-VOLT MOTOR DRIVE UNIT provides plenty of power to handle the required capacity and added speed of this type of truck.

SAFETY

FOOT TREADLE SAFETY SWITCH. When weight is applied the power is on and the brake is off. When foot is removed the power is off and the brake is applied. Foot and body guards are furnished on platform for operator's protection.

*Most Experience and Creative Ability in the*

**MOTO-TRUC**

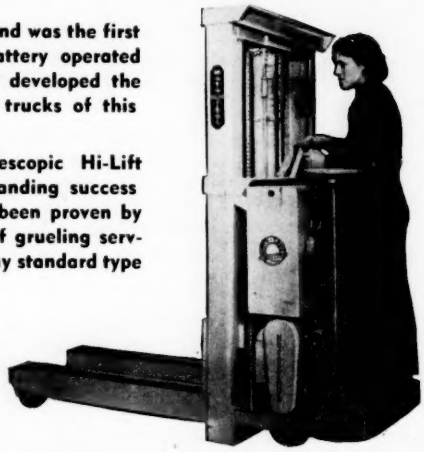
*Motorized*

**BATTERY OPERATED WALKIE TRUCKS.**

*18-Volt Ride-A-Type Truck*

Moto-Truc originated and was the first to build motorized, battery operated walkie trucks and has developed the most complete line of trucks of this type.

The Ride-A-Type Telescopic Hi-Lift Truck is another outstanding success of Moto-Truc. It has been proven by more than two years of grueling service. Made to handle any standard type of pallet or skids.



*BULLETIN NO. 50 shows the extensive Moto-Truc Line. Write for it today.*

PALLET TRUCKS • HI-LIFT TRUCKS • PLATFORM TRUCKS

*The* MOTO-TRUC Co.
1953 E. 59th Street
CLEVELAND 3, OHIO.
ORIGINATORS OF MOTORIZED HAND TRUCKS

## Our New Format

Starting with the June issue ICE AND REFRIGERATION began making major changes in its format. Additional improvements have been made in this issue. These changes include new style heads; new departmental headings, with three-column instead of the wider two-column makeup. The text type remains the same,—eight point Excelsior on ten point slug. This is a modern type and is easily readable.

The text material, set 13 picas wide instead of 20½, is more legible and conforms to the newer ideas of magazine makeup and display. A change in type style and size headlines also provides better display and readability. Subtitles and bold face boxes will help to highlight the important facts in leading articles.

Another improvement is, and will be, an increasing number of illustrations to amplify feature and news articles. Quite often a picture will tell a story better than words, and our editors are constantly on the lookout for such material.

This new look has been adopted only after serious consideration, study and experimentation and advice from expert typographers. Some additional changes remain to be made, all to be pointed toward modern appearance, readability and to show the world that ICE AND REFRIGERATION, like the industry it represents, is as alive to the happenings of today as this morning's newspaper. We would be interested in hearing from readers as to how they like it.

**TRAINING** for ice service men was inaugurated in Indiana during 1949 with a special course directed by G. Elwood Hookey of Indiana University and sponsored by the Indiana Association of Ice Industries. It will be continued in 1950.

**A PORTFOLIO** for selling refrigerators from photographs has been designed for its members by the Canadian Association of Ice Industries.

**FOR HATCHING EGGS** the best storage temperature is 50 F, according to tests conducted by the United States Department of Agriculture.

**ICE** is used for sending to market about half the shrimp produced in the United States.

# In The Spotlight

**A SURVEY** shows that nearly half of the mechanical refrigerator owners use about two million tons of ice a year. This market can be greatly increased by making ice available when and where these new customers want it. See page 31 for detailed results of the survey.

**THE ICE MARKET** is changing, according to surveys and discussions at a recent Texas ice merchandising conference. Severe losses have occurred in domestic trade, but this is still the source of around 50 percent of gross revenue. Commercial trade has shown smaller decreases and in many markets there has been an increase.

**THIS YEAR,** the ice industry is observing its 100th anniversary, based upon patent for an ice-making machine granted to Dr. John Gorrie of Appalachicola, Fla., dated 1850. A sketch of Dr. Gorrie's achievement, along with contemporary events in the ice manufacturing industry is given in the article starting on page 19.

**ACCORDING** to a patent granted to a man in Los Angeles, a very small amount of an organic compound such as fluorescein added to ordinary water will make solid and crushed ice last 7 to 16 percent longer and reduces brittleness in the ice.

**NEW LEGISLATION** to furnish government money for acquiring and operating market facilities for fresh produce is meeting active opposition of refrigerated warehousing and other industry groups. A summary of the provisions of the proposed bill and reasons for opposing it are given in the article starting on page 49.

**COVER PICTURE: Section view of machine room in new food freezing and storage plant of Continental Freezers Inc., Lafayette, Ind. Ammonia compressors are shown in the background and condensers and receiver at left. The well finished insulating job on the low temperature pipe and connections is evident.**

**ICING CHICKENS** in paper bags is profitable for an Illinois ice company. Birds are packed 12 and 24 per bag at processing plant, using 3 lbs. ice per chicken. Poultry cooled to 35 degrees before packing, then delivered to retailer in low temperature truck. Most dealers follow through and display these chickens on ice!

**THE WAGE-HOUR ACT** is now under the jurisdiction of the Secretary of Labor, following passage by Congress of the President's Reorganization Plan No. 6. Little change in coverage or administration is expected, but a more stringent drive for enforcement is predicted. See discussion of its new status on page 29.

**HOUSEHOLD** mechanical refrigerators set a new monthly production record in March, 25 percent above the previous high of April 1941, the Bureau of Labor Statistics reported. As a result the refrigeration and air conditioning industry hired an additional 31,000 workers between December, 1949 and March, 1950.

**A NEW FREEZING** plant has been opened at Lafayette, Ind., by Continental Freezers, Inc. For story of opening and pictures, see page 58.

**TEXAS ICE DAY** observed in the State of Texas, resulted in the sale of nearly 1,000 ice appliances. See story on page 37.

**CITY PRODUCTS** of Cleveland has developed a formula for restoring burnt-out grass to its original greenness. With a mixture of snow ice and ammonia sulphate, a tentative agreement has been made to freshen up the Cleveland Indian's ball park this summer if the usual droughts make an arid desert behind the shortstop. Golf courses also are said to be interested.

**TREATMENT** of berry-picking boxes has been studied by the Engineering and Development Division of the Western Regional Research Laboratory, Albany, Calif. As a result grower-used boxes have been used with success. A detailed report has been issued giving simple, practical equipment and specifications for such treatment.

**INCREASED USE** of fish and other seafoods offer a growing market for refrigerated storage and for ice. This subject is discussed in the article on page 23.

**FROST HEAVING** can damage freezer floors. Information on this phenomenon and precautions which should be taken for construction of freezers on the ground or in the basement are given in the article on page 41.

**MATS** for small newspaper advertisements are being supplied to members by the Canadian Association of Ice Industries.

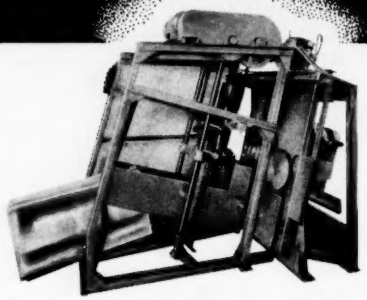
**TWO-THIRDS** more floor space was added to the Morrell Los Angeles branch packing plant by a quarter-million dollar addition. See story and pictures on page 27.

**WATER SUPPLY** of Newark, N. J., will be conserved by a new City ordinance requiring air conditioning equipment of three tons and over to have a device for recirculating the water.

# CUBE...SCORE...SIZE...

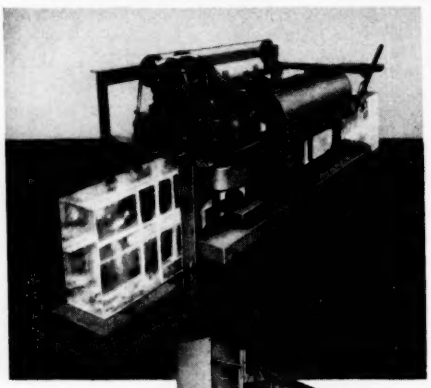
## at bigger profits with G-W equipment

*G-W has made ice-plant equipment for 136 years. We've learned to incorporate features that mean better production and bigger profits for you. For instance:*



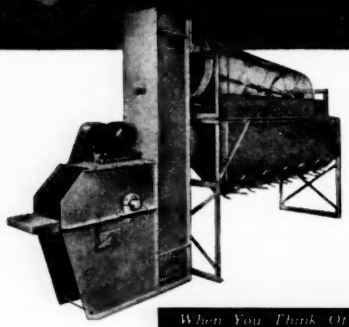
**. . . G-W CUBERS CUT ICE WASTE TO A MINIMUM**

Bigger profits because less ice is wasted, more sold. Take the Type CA Cuber. Fully automatic, it accommodates a 300 to 400-lb. cake of ice and shoots out cubes at a rate of 26,000 an hour. Cake is constantly held firm and square in alignment with cutting saws for perfect cubing. When cake is 75% cut, the next one slides easily into place. It is sturdy, corrosion proof, and perfectly safe for operators. Designed for minimum maintenance and operation costs. Details are in Bulletin 488.



**. . . A G-W SCORER TO MEET EVERY REQUIREMENT**

Bigger profits because you keep initial cost at a minimum by choosing one of many units—the one that fits your capacity. Type F Scorer is a semi-automatic scorer for small and medium tonnage plants. One man can score three 300-400 lb. cakes a minute. It is semi-portable and requires no pit or foundation. Type G is fully automatic with a capacity of five 300-400 lb. cakes a minute. Type UM accurately scores five 300-400 lb. cakes per minute and features built-in feed and discharge conveyors. All are precision-built, designed for maximum efficiency and operating economy. Send for Bulletin No. 489.



**YOUR CHOICE OF 4 G-W SIZERS**

Again you can build profits by keeping initial cost down. There's a G-W Sizer for every plant need. Four different models, all in the S-16 series are available to meet different requirements in elevator heights and bin capacities. Send dimensional requirements and let us recommend the right sizer. Bulletin No. 482 gives you complete details on standard machines.

**GIFFORD-WOOD CO.**

*Since 1814*
*Hudson, New York*

420 LEXINGTON AVE. NEW YORK, 17 — RAILWAY EXCHANGE BUILDING ST. LOUIS 1, MO. — 565 W. WASHINGTON ST. CHICAGO 6

*Pacific Coast Representative:*
WESTERN ICE EQUIPMENT COMPANY, 420 Market St., San Francisco 11, Calif.

*When You Think Of Material Handling, Think Of Gifford Wood*

UP-ENDER • CUBER • ELEVATOR BREAKER • TIERING MACHINE • CONVEYOR • BREAKER

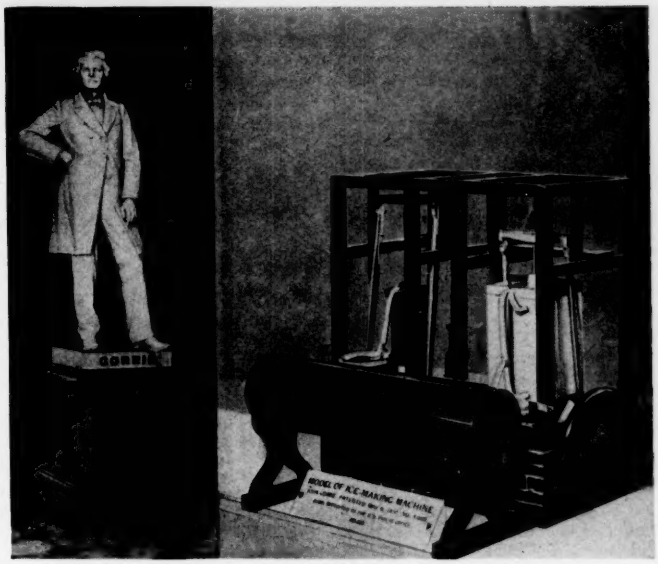
6708

# GORRIE – PIONEER ICE MAKER

***100 years ago Dr. John Gorrie of Apalachicola, Fla. was awarded a patent on the first American ice-making machine, beginning the ice industry in America.***

ON THIS, the 100th anniversary of the manufactured ice industry in America, and the 59th of ICE AND REFRIGERATION, it is interesting to turn back the pages of time to a century ago, to an event which resulted in the establishment of the American refrigerating industries. It was a small, almost obsure event, for few people knew about it and even fewer appreciated its significance. And no ice was actually manufactured on a commercial scale until some years after Dr. John Gorrie of Apalachicola, Fla., was awarded a patent for an ice making machine in 1851 (dated back to 1850). But this was an important event. For this American designed ice-making machine manufactured ice for the first time in America, and the manufactured ice industry which grew out of that invention and others, brought refrigeration into the home and industry and commerce of the country.

Dr. Gorrie designed the first American ice making machine but for a clear picture of the times in which he lived it must be recognized that there were others, scientists and inventors in England and France, who did pioneer work along that line during that time and the preceding century. From the files of ICE AND REFRIGERATION the following information is gleaned.




*Statue of Dr. Gorrie in the U. S. Capitol building, Washington, D. C., and model of the Gorrie ice machine on display in Smithsonian Institution, Washington, D. C.*

### Early Inventors

In 1775 Dr. William Cullen received a patent for a machine to produce ice. He reduced the atmospheric pressure with an air pump, the evaporation of the water being so increased as to produce freezing temperatures. This was the first ice-making machine.

In 1810, Leslie made ice with a combination of sulphuric acid and water. In the meantime the Royal Institute of England had been founded in 1799 and in the early 1820's Humphrey Davy and Michael Faraday demonstrated that gases could be liquified by mechanical compression, with continuous cooling apparatus to carry away the heat. In 1824 Vallance of France obtained patents in Great Britain for refrigeration by the use of sulphuric acid in an absorption system.

Credit for inventing the first machine capable of producing ice in commercial quantities is given to Jacob Perkins, an American engineer living in London. His patent was obtained in August 1834, with ether as the refrigerant. He used the refrigeration cycle similar in basic principle to the modern compression refrigerating system. This patent was improved by Dr. James Harrison of Australia in 1856, and was then brought into practical use in the refrigeration equipment of breweries and food products plants. Prof. A. C. Twining of New Haven, Conn., was granted a patent in England in July, 1850 and in the United States in November, 1853, on an ice-making apparatus comprising a double acting vacuum and compression pump.

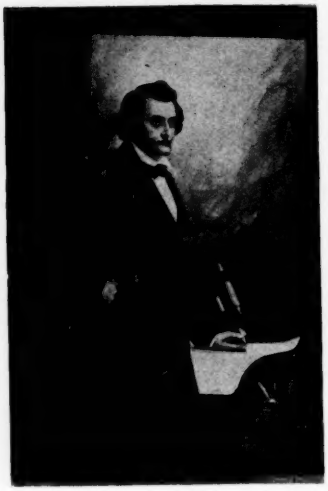
To Dr. John Gorrie was issued the first patent in America for the manufacture of ice by mechanical operation, although several patents were issued to inventors of so-called ice machines in the United States prior to 1851, the records of the department showing the following: No. 1,240, July 12, 1839, to James E. Mauel, Philadelphia, Pa.; 1,941, January 23, 1841, T. B. Smith, St. Louis, Mo., and 4,697, August 18, 1846, John Dutton, Aston, Pa.

Although these numbers, dates and names are matters of record in the U. S. patent office, an article in the August 1901 issue of ICE AND REFRIGERATION, states that it is not known that the crude devices called ice machines were ever utilized or had existence otherwise than on paper. It is probable that all of these apparatus were designed to facilitate the formation of natural ice, the Dutton machine being a spraying apparatus, or a wheel to throw the water against the walls of the ice house. It was expected that the water would freeze as fast as it was sprinkled and the house filled.

### The Gorrie Story

Dr. Gorrie first practiced medicine in Abbeville, S. C. There he soon

established an excellent reputation, gained social prominence, and became a friend of John Calhoun. It was in Abbeville that he became interested in relieving the sufferings of malaria and yellow fever patients. One of the major problems of the Port of Apalachicola, Fla., then was malaria and yellow fever. Through his friend, John Calhoun, he was commissioned as medical officer in charge of the U. S. Marine Hospital there. The year was 1833.



*Oil painting of Dr. John Gorrie unveiled at the National Ice Convention New York City, November, 1949.*

At first the doctor experimented with medicines, and then came to realize that as air temperature dropped, his patients' fevers also were lowered. He then turned his attention to a method of cooling the bedrooms, which resulted in the first practical application of the idea of air conditioning, and later, in a process of making ice mechanically. To accomplish the desired results he lowered the temperature of the room by suspending from the ceiling a container filled with ice over which a current of air was forced.

Another version of his room cooling arrangement was that he made a vent in the ceiling and hung a block of ice beneath the opening from which air passed downward and over the block of ice. Further improving on this system, he installed a steam driven pump to force air over the cake of ice and through the room. But inadequate supplies of natural ice and its price during extremely hot weather, when it sometimes sold for as high as a dollar a pound, made the use of this plan not always feasible.

So he began experimenting with mechanical refrigeration and by 1844 he had built a simple machine, forerunner of the compression type refrigeration machine of today. He built two of these machines which he used to cool two rooms in his home which he used for hospital purposes and by 1845 he had improved it to such an extent that he could produce ice in small amounts. This machine had a compression cylinder, the air passing from it into a cooling chamber immersed in water.

This was the forerunner of the compressed air machine, later improved upon by Dr. Alexander Kirk and others. A picture of the model of the machine displayed in Smithsonian Institute and Dr. Gorrie's statue in the U. S. Capitol are shown here.

Records of the Patent Office show that he applied for a patent on March 16, 1849. On May 6, 1851 the United States Patent Office granted the patent. On August 20, 1850 he had been granted an English patent on the process and machine.

From a story told by an old colored man, Gus Wilburn, and from another verified story passed down through the family of Mrs. Betsy Liverman, a nurse in his hospital it seems more than likely that the making of ice happened accidentally when the refrigeration machine was allowed to run an unusually long time on one extremely hot day. The pipes became clogged with ice.

The story is told that in 1846 the ladies of Trinity Church, Apalachicola, Fla., were giving an ice cream festival, the success of which depended upon arrival of a shipment of ice. The middle of the afternoon of the festival day the boatload of ice had not arrived and the ladies were ready to weep with disappointment. But Dr. Gorrie, learning of their plight, made a quantity of ice on his machines and delivered it to them, thus making it possible to go ahead with the festival.

## Refrigeration Suggested In Magazine Article

The first time Dr. Gorrie had advocated the use of a machine for making ice was in a series of articles published in the "Commercial Advertiser" in 1844, for which he used the pen name of "Jenner," apparently to avoid ridicule for suggesting something which, at the time, seemed highly visionary. In one of these articles, he foresaw the future practical use of refrigeration for the preservation of perishable foods, writing as follows:

"There are other advantages to be derived from the generation of a cool dry air within the building—equally applicable to ships as well as buildings. It might enable the hardy mariner to better serve mankind, he who contributes so much to our wealth and pleasure by transporting from shore to shore the rich production of the tropics—as animals and fruits, when divested of life, may be preserved entirely with all their juices in a low temperature; this principal of producing and maintaining cold might be made instrumental in preserving organic matter an indefinite length of time, and thus become accessory to the extension of commerce."

Commenting on these articles, the editor of the publication wrote as follows: "We know of no want of mankind more urgent than a cheap means of producing cold. To warm countries it would benefit and afford benefits as countless in number as those that arise in cold climates from the finding of unlimited fuel. The discovery and invention which our correspondent proposes to apply to this subject are calculated, if true, to 'alter and extend the face of civilization.'"

In 1900, some years after ice manufacturing and cold storage had become established business, articles on treating diseases by low temperatures, which had been written previously by Dr. Gorrie under the pen name of "Jenner," were published in the July and August issues of ICE AND REFRIGERATION.

## Commercial Venture

Seeking to obtain additional funds to build and put into operation a large enough machine to produce ice in commercial quantities, Dr. Gorrie went to New Orleans. A man from Boston, whose name is not known, purchased a half interest, but before the project could be launched the partner died. It is thought that he then tried in other cities of the South and even in New York to gain the necessary financial backing to carry out his plans, and not being successful was forced to return to Apalachicola. It is suggested in one account that opposition of members of the "ice trust" who were alarmed at this prospect of competition with the natural ice business, was an element of his failure to get financial backing.

When his plans for manufacture of the machine collapsed, Dr. Gorrie apparently gave up the idea and returned full time to his medical practice. But failure to market his invention seriously affected his financial affairs. He began to brood over his difficulties, became ill and died on June 29, 1855. Eight years were to elapse after his death and thirteen years after the first patent date, before attention was turned to commercial production of ice.

### Public Recognition

To Capt. George H. Whiteside, of the Apalachicola Ice Company, and long an intimate friend of the inventor and philanthropist, is due the credit of the movement which resulted in the first public recognition of Dr. Gorrie's accomplishments in the erection of a monument to his memory. The monument was planned and erected and presented to the the city of Apalachicola on April 30, 1900. It stands upon an elevation some five feet in height, the inscriptions on the four panels being as follows:

(1) Dr. John Gorrie, born at Charleston, S. C., October 3, 1803; died at Apalachicola, June 29, 1855.

(2) Inventor of the ice machine and refrigeration, as described in his patent No. 8080, August 22, 1850.

(3) A pioneer who devoted his talents to the benefit of mankind.

(4) This monument was erected by the Southern Ice Exchange, 1899.

In addition to this fitting recognition, the State of Florida has honored Dr. John Gorrie by selecting him as one of its two representatives in the hall of fame. In 1914, his statue was erected in Statuary Hall, in the Capitol of the United States. The modest first ice-making machine may now be seen in the Smithsonian Institution, Washington, D. C. Gorrie Square in Apalachicola and Gorrie Memorial Bridge in Florida were so named in his honor.

In recent years Mrs. Laura B. Hobbes, teacher in the John Gorrie Junior High School of Jacksonville, Fla., has done much research on Dr. Gorrie's career and deserves much credit for a movement to give him a place in the Hall of Fame at New York University and other honors.

### Commercial Ice Making

The first use of an ice-making machine of which we have record was made in 1863 when a small Carre' machine was set up in New Orleans. It was not a success, because those in charge did not know how to operate it. But in 1868, Sylvester Bennett installed six 10-ton Carre' absorption ice-making machines at Gretna, La., for the Louisiana Ice Company. These machines operated successfully.

The Carre' machine, designed by Edmund Carre' for making ice and cooling drinks in Parisian cafes in the early 50's was an improvement on the Vallance machine. In 1858-60 his brother Ferdinand E. P. Carre', placed on the market a machine which was the basis of the ammonia absorption system of today.

Introduction of the Carre' machine, subsequently improved by Mognon and Rouart in France; Vass and Littman in Germany; Reece, Mort, Nicolle and others in England and Australia marked an important era in mechanical refrigeration. The original patent in the United States was issued October 2, 1860 and again reissued February 17, 1873. This device made use of the ability of cold water to absorb a large quantity of ammonia gas and to release this gas under pressure when the solution is heated.

The manufacture of ice in the United States was given great impetus by two outstanding events. The first was embargoes established on shipments of natural ice to the South during the Civil War. Soon thereafter the manufacture of ice was begun in the South, spreading from there to the North, and in the decade of 1880 to 1890 it began to assume large proportions. About 1883 ice plants were being established all over the South.

The summer of 1890 was abnormally hot and this, with an almost complete failure of the natural ice crop the winter before, created an abnormal demand for ice. Ice-making plants to supply this demand, swamped the machinery concerns with orders for new equipment. Salesmen accepted more orders than they could fill, with the result that deliveries were extremely slow. One of the leading machinery plants in Chicago stretched its resources to the breaking point and was forced into bankruptcy. New concerns entered the field, but since the number of trained men were limited, many of them met with ultimate failure.

*Monument erected at Apalachicola, Fla., in memory of Dr. John Gorrie in 1900 by Southern Ice Exchange. Standing at base of monument is Miss Mabel Osborn, chairman of the Gorrie Memorial Committee of Apalachicola.*

It was at this time that ICE AND REFRIGERATION, the first business paper in the world devoted exclusively to the ice and refrigeration industries, entered the field. Plans for this new publication were started in 1890 and the first issue appeared July 1, 1891, published by H. S. Rich & Company, Chicago, with J. Frank Nickerson as editor and John Glenn Collins as advertising manager.

## Ice Display Shown at Texas Restaurant Conference

DURING the Texas - Southwestern Regional Restaurant show sponsored by the Texas Restaurant Association in Dallas, June 6-8, the Southwestern Ice Manufacturers Association maintained an interesting display. The display was under the direction of Edd Reeder of the Southland Corp., L. W. Sandusky of Southern Ice, Inc., and E. O. Blakeway of Southern Properties, Inc., Dallas.

This display was presented in dramatic fashion, showing the various uses of ice for restaurants, and the modern attractive ice-using equipment designed for restaurant use. The use of processed ice in the restaurant, the large reach-in refrigerator and the display of poultry, fish and fresh meat on ice each was presented under the direction of one of the three ice merchandisers in charge of the show. Signs prepared in the form of highway markers helped to tell the story.

The Restaurant Association furnished encouraging cooperation to the association in getting before their members the merits and claims for ice service.

# Air Conditioning and Refrigeration Machinery Association Holds Annual Meeting – Operations of Year Reviewed

WITH AN attendance larger than any in its long history, the Air Conditioning and Refrigerating Machinery Association, in its annual meeting ending at Hot Springs, Va., May 25, climaxed a year's highly successful operations. These included activities in the fields of codes and standards formulation, statistics and marketing, foreign sales promotion and inter-industry relations. A number of ACRMA's product sections also held meetings during the three days' sessions.

## Shanklin Elected President

Arthur P. Shanklin, vice-president of Carrier Corporation, was elected association president, succeeding W. H. Aubrey of Frick Company, Inc. In accepting the leadership of ACRMA, Mr. Shanklin said,

"In my opinion, to do an effective job we need to do two things within ACRMA. We need to broaden the scope of our activities and we need to attract to us all of the representative manufacturers in our industry.

"There is no industry in the United States with a brighter potential future than the air conditioning and refrigeration industry. Its products are basic essentials to the Nation's peacetime and wartime economy. It has seen tremendous advances in product development and application in the past twenty years. It is our responsibility in ACRMA to do all we can to see that the industry continues to grow strongly and soundly for the benefit of the users of the product, which is to our benefit as manufacturers.

"We must continue to practice that enlightened selfishness by continuing to formulate equipment and application standards to serve as guideposts for our customers and the sound growth of the industry; we must continue to provide statistical data so that we may intelligently plan our production and sales; we must continue to tell, on every possible occasion, of the essentiality of air conditioning and refrigerating equipment for its multitude of commercial and industrial uses. If we do these things, we will continue to be able to meet, with confidence, strength, and effectiveness, many of the problems which are a daily challenge to the industry's progress and development."

Singled out for special honor were six men from ACRMA member-companies who were felt to be the principal architects in the formulation of the American Standard Safety Code for Mechanical Refrigeration (ASA B9, sponsored by ASRE) and whose five years of work on this fundamentally-important industry document had been successfully concluded during the year. The men honored by formal resolution of the Association's annual meeting were: E. T. Benson (Frigidaire), J. R. Chamberlain (York), F. H. Faust (General Electric), W. A. Grant and D. M. Abel (Carrier), W. R. Hainsworth Servel).

*A. P. Shanklin, Carrier Corp.*
*President Air Conditioning and Refrigerating Machinery Association*

## Guest Speakers

Guest speakers at the annual meeting and the ACRMA annual luncheon were Joseph E. Moody, president of the Southern Coal Producers' Association and H. B. McCoy, director of the Bureau of Domestic Commerce of the U. S. Department of Commerce. Mr. Moody, for a number of years, was prominently identified with the refrigeration industry in industrial relations activities.

In speaking on the subject "Washington — Crossroads of Industrial Might," Mr. Moody emphasized particularly the need for those interested in the welfare of business and the maintenance of American free enterprise to take a personal and active part in politics.

"Too many of those engaged in business and industry feel that their personal political responsibility ends with the making of a cash contribution to a political campaign fund. They apparently do not realize that of equal or greater importance is making known to their legislative representatives in Washington their views on the important issues which affect the welfare of industry as a whole.

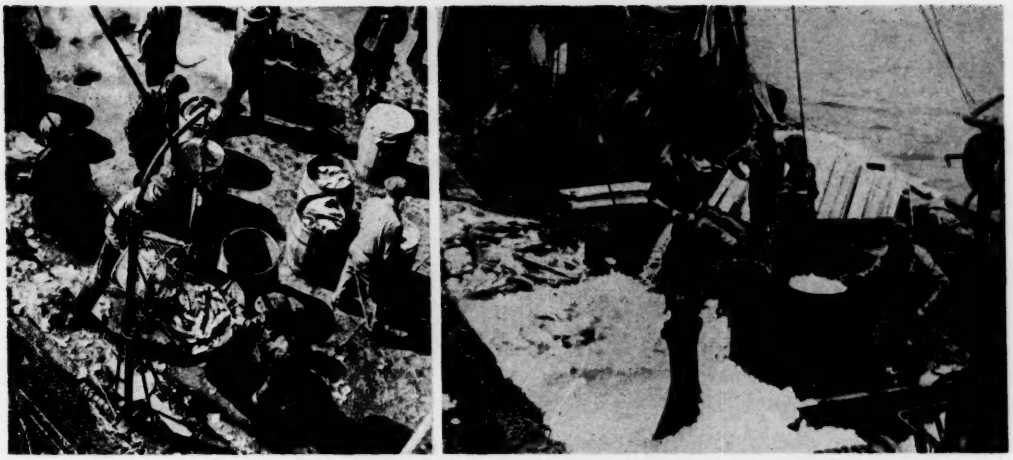
"Labor, agriculture, and other elements of our national economy are not so politically naive or lazy as are business men in general. Labor, agriculture, and other groups are constantly and highly vocal in pressing their viewpoints on their elected representatives. To the senators and congressmen, most of whom are sincerely attempting to do their best for their own constituents and the nation, these voices represent the voters back home to whom they must be responsive, or face defeat in the next election. But the voice of business, expressing the views and representing the votes of the local business community is rarely heard by the individual senator or congressman.

"Naturally, the business man, who has perhaps contributed cash but none of his personal self to the fight, in the political arena, is frustrated, confused and angry at the enactment of legislation which unfairly penalizes him and his business operations. But in the last analysis, it is the business man himself who is to blame because of his lack of personal interest and effort to influence the course of political events which so vitally affect him."

Punctuating his remarks with illustrations from his eight-months' experience in the recent turbulent negotiations with the United Mine Workers which ended early this year, Mr. Moody said "the Southern operators were not beaten finally by their labor union and government opponents but by their 'friends,' the coal operators of the North and West. As a result of the Southerners' loyalty to principal and refusal to be subservient to the threats of property expropriation and dictation by a labor autocrat, many of them are ruined financially and have had to close their properties."

Mr. Moody concluded with a warning that all American business faced a similar outlook in coming years unless the trend to socialistic government control and labor dictator-

*(Continued on page 64)*



*Fishing operations on the docks. At the left, stevedores at the Fulton Market dock, New York City, are unloading and weighing fish in the early morning. (Photo from Fish and Wildlife Service). At the right, after fish are removed from boat ice used on the trip is taken out and dumped, the holds are cleaned and new ice is taken aboard for the next trip. (Photo from Fishing Gazette.)*

# BETTER SEAFOODS – MORE BUYERS

***Use of seafoods can be increased by digging up and using essential facts. More seafoods will require more refrigerated storage and more ice.***

**H. C. DIEHL**
**Director Refrigeration Research Foundation, Berkeley, Calif.**

IT IS MY impression, gained from discussions with business and technical leaders of your industry, that the consistent consumption of seafoods by more people is possible of achievement. It is self-evident that the daily diets of many people could thereby gain in variety and in food values. It is also obvious that factors of price, merchandising methods and seasonal availability to say nothing of quality for the moment, will have much to do with the obtainment of more of the food dollar of the consumer in competition with other foods. Also, we know that we are competing with other foods for more space for seafoods in the national stomach, which can hold just about so much food in the overall everyday in the year even if foods are freely available.

**The growth of the fresh and frozen seafood volume has paralleled the expansion of the refrigeration industry. Few consumers realize that fish were being frozen in important volume more than 50 years ago and were being shipped across the country. The total product value however was small in comparison with the present time. Now there are few places in this country where seafoods are not a regular menu item. A survey would probably show that the word "Seafood" takes first place on restaurant signs. Yet it is quite apparent that seafood volume can be greatly increased with profit to its allies in the refrigerating industry.**

## Warehousemen and Ice Industry are Interested

The prospect of **wider** consumption of seafoods intrigues the refrigerated warehouseman, as it may well also members of the ice industry, by the logical increase in our business, which may be expected to follow. I make no apologies for this selfish interest because if we are honest with ourselves, we will recognize that in these prospects for more business by the industries concerned lie the opportunities for mutually profitable advancement of our industries and of every alert individual member thereof.

The title of these comments to you is a question which means exactly what it says: "Better Seafoods for more Consumers. How can we do it?" There is no inference that the speaker now has the ready-made answers. The word "we" is used advisedly because I do believe honestly that, at least in the technical groundwork upon which the production and distribution of better seafoods rests, the answers can be obtained best and quickest by a pooling of our knowledge and our willingness to strive aggressively for its implementation in our respective industries.

Perhaps individual members of your industry have not fully exploited the potentialities of technical information to their own advantages. Possibly there are some who regard research and technical practice as highbrow and unpractical. If so, they

Presented to the Technologic Division annual meeting, National Fisheries Institute.

*A variety of seafood artistically displayed on ice made up the exhibit of the Department of Interior's U. S. Fish & Wildlife Service at the National Restaurant Convention, held May 23-26 in Chicago. The display case and the ice were supplied through the cooperation of the National Association of Ice Industries.*

are probably not markedly different from warehousemen since we are all human. The value of traditional experience as a guide in industrial practice is substantial and cannot be ignored. But it is, by no means, everything.

Both your industry and ours deal with perishable commodities which compel us, eventually at least, to take cognizance of technical influences which affect the success of our business. Years ago, that fact may have not been so evident or even important. Today scientific practice in our businesses is an essential ingredient of the maintenance of our competitive position.

## Mutual Interest in Refrigeration

Since your chairman was so kind as to invite me to do more than sit and listen, which my limited knowledge of fisheries technology really suggests that I do, I would like to repay his and your courtesy by giving some thoughts to you, based on a seven years experience with an industrial research program. Mine are not unique ideas; possibly they are useful to you only in the fact of their reiteration by another person in another way . They would like to suggest to you that our two industries, joining action on some technical problems of mutual interest, might actually accomplish more practical good than we can achieve acting separately. This is what one might call an industrial application of the old adage that two heads are better than one.

In recognition of the fact that improvements in the quality of commodities, which it refrigerates, and improvements in the practices of refrigeration are the basis which justify the continued use of refrigeration facilities by warehouse customers, the Foundation sponsors and aids by grants of funds investigations of many commodities, of which refrigerated warehouses are the temporary custodians and some of the engineering problems of refrigerated warehousing.

While our primary interest often impels us to begin such investigations, without requesting any financial aid from the commodity industry, which is concerned, it is our established practice to consult first with business and technical leadership of the industry. We do so in order to be guided in research planning by the greater industrial experience of the commodity industry, and to avoid undesirable duplications of effort. We do so to indicate the genuine interest of the warehouse industry in making the solution of the problem as mutually advantageous as possible. We do so because experience has shown that many of the problems of storing commodities for optimum results begin in the handling or processing practices of the commodity industry itself.

## Joint Counsels Uncover Common Problems

This principle of joint counsels during the past year has brought me in touch with N.F.I. leadership, so that we might frankly and fully explore our mutual interests and problems. We do this on our side, not in the assumption that we have the right answers or that we know your business better than you do. On the contrary, we possess only general experience in commodity refrigeration, and in the industrial employment of technical facts developed by our sponsored researches. With these and an honest desire, if you are willing, to see whether we can pool our information, experience and interest to mutual advantage, we have knocked on the N.F.I. door to ascertain your interest in such exploratory undertakings.

We are gratified by a very friendly initial response, of which this opportunity of speaking to you briefly is only one example. Merely to state a fact, may I say that before we approached N.F.I. we prepared ourselves so as to be at least a little equipped to sit in counsel with you. Able leaders and scientists in fisheries research have been members of the Scientific Advisory Council of our Foundation—Mr. Lemon of the Fish and Wildlife Service in Washington, D.C., Mr. Young of the Canadian Fisheries Research Board in Vancouver, B. C., Dr. Proctor of M.I.T. in Cambridge, and Dr. Tressler of Westport, Connecticut. Dr. Harden Taylor has been a member in the past but retired at his request.

We have gained some experience in marine products research by sponsoring now for the fourth year, the investigations of gulf shrimp at Louisiana State University under Dr. E. A. Fieger. We are now initiating cooperatively with the Fish and Wildlife Service and the University of Maryland a study of freezing and refrigerated storage of crabmeat, both of East and West Coast origin.

Through consistent contact with persons and researches in fisheries technology abroad and in this country, we have hoped to enlarge our limited knowledge of the many details and progress of this technology.

## Dormant Information Available

Initial conversations with N.F.I. technical leadership has given me the impression that while there still are many areas for new exploration in fisheries technology, there is prob-

ably much more information available that is not implemented in practical usage, for one reason or another. This experience is not new to me in our own technical program. We spend quite a little of our money now to get things actually done as a consistent practice, although the information has been available for years.

## The Need for Food

In preparation for this meeting, I read recently, with much interest, an address entitled "The Future of our Fisheries" given in New York City by Harden Taylor to the 1946 convention of three national groups associated with shell fisheries. Certain points in his remarks serve as hooks on which to hang some of my comments.

First, when we speculate whether more people would eat more seafoods, we must consider, according to Dr. Taylor, that mankind everywhere consumes close to 1800 pounds of food, net weight, each year. Therefore there is a limit to individual capacity, and when one food occupies a greater portion of that individual stomach, some other food or foods are excluded. "Any food commodity, then, which fails to maintain its relative desirability for some reason will fall behind in the competition."

Dr. Taylor pointed out that while fisheries apparently can meet all comers in the contest for first place in nutritive and esthetic values at competitive costs of production in human effort, unlimited expansion of fisheries was not possible because of biological limitations.

His comment was that if fisheries approach the limit of production we have to be content presently with that situation, until scientific advances in fields other than processing technology, which I need not discuss here, make expansion possible. He did say that the industry could look to improvements in quality and attractiveness and better prices for any increase in industrial prosperity and to some particular fisheries for a moderate increase in volume.

## Distribution Facilities Required

Dr. Taylor considered the potentialities of marketing, which he characterized as the most stubborn difficulty of the fisheries industry. He asked the question "How can such a relatively small volume of highly perishable product, irregular and uncertain in supply, made up of nearly 200 different kinds, derived from 5000 miles of coast line, be efficiently distributed to thousands of cities, towns and villages in this country," pointing out that New York City alone consumed in 1946 roughly 25 percent of all the fresh or frozen fish, or nearly 12 pounds edible portions, while in the rest of the country the per capita consumption was not much over 3 pounds edible portions.

*A modern fish and seafoods market places the fish and other foods in beds of ice which preserves the foods and provides an appeal to customers.*

I would be presumptious to analyze such problems of your industry but I cannot dispel the fact that the solution of some of these problems may be in the developments in other industries. For instance, while seafoods which actually pioneered food freezing, could apparently not fully exploit that advantage initially, but only lately when other frozen foods of greater volume provided distributional facilities, dispersal of seafoods in the frozen form now offers one of the most attractive avenues for extending the availability in time and distance of fish and other seafoods.

Quality factors then become of great importance, because the processed seafood, which now has added values because of manufacture, must justify its position competitively. But its greater utility and attractiveness, if it is of consistently acceptable quality, justifies some of the costs of distribution, which Dr. Taylor considered deterrents to the extended distribution of seafoods. The consumer has more usable and better quality seafoods than he has ever seen before, and to a degree will pay for what it takes to make such a product.

Technology therefore, or the research which provides the tools of technology, has made possible an advance in industrial merchandising. Hand and hand with the potentialities of freezing techniques go the filleting developments, which make attractive and protective packaging possible and leave behind, for manufacture into by-products, 50 to 60 percent of the offal. This also is a technological achievement, if one considers technology a union of science, engineering and industrial know-how. But packaged fish, unlike unpackaged, can be judged for quality, for better or worse, only after the sale to the consumer has been consummated. Therefore, product quality becomes of paramount importance.

## Attractive Packaging Enhances Salability

Consider further the linkage between these facts and one other factor which Dr. Taylor considered as a significant stimulant of fish merchandising—the entry of chain grocery stores into this field making seafoods conveniently accessible to millions of people who would otherwise never see fish. Increasing public interest in frozen foods—filleting of fish—possibility of packaging as a consequence—the marked increase in retail sales of packaged foods: there is an important sequence for you, which has materialy affected the merchandising of fish.

Finally Dr. Taylor stated that

"ways must be found for improving the handling of fish, not only aboard fishing boats, but all along the line, where deterioration takes the bloom of freshness, loads on an unnecessary competitive disadvantage and eases the way for foreign competition from more northerly and colder waters nearer home bases."

With this last point I come to the main objective of my comments to you. Recognizing that this is only one of several points of equal or greater influence on the consumption of seafoods by more people, I stress it here because it is primarily a responsibility of the fisheries and refrigeration technologists.

### Put Facts to Use

The responsibility is not only to dig up new facts, so as to press outward the frontiers of the potentialities of our industries, but also to strive aggressively by every conceivable device to have the essential facts, old and new, implemented and put to use. I believe that sometimes when technologists believe that they fail to achieve recognition by business men, it is because we are not as determined and persistent in our efforts to get facts adopted in industrial practices as we are in the researches which produce them.

We tire more easily, because it is a mode of action not natural perhaps to our training, in the effort to translate to the business man the direct applications of science in his business; possibly also because we either lack the courage or the ability to make clearly apparent and active the potentialities of our findings in actual industrial practice. I appreciate that there are certain practical limitations imposed on my comments but my own experience has taught me that aggressiveness applied discreetly, subtly, consistently, doggedly or any other way you please, often brings results in the end in the adoption of scientific facts even in businesses inclined to be guided by tradition, where initial achievement was discouraging.

### Mutual Interests in Refrigeration

I have told you that our industry would enjoy sincerely working more closely, in technical matters involving refrigeration, with yours. This applies to individual warehousemen who store seafoods, I can say with confidence, as well as to the Foundation. What direction our joint exploration or action, if such is indicated thereafter, should take I cannot now say.

Our first area of action, if you please, between the technological Division and the Foundation, might well be a detailed exploration of ways in which to move seafoods with highest quality achievable, through the channels of distribution, followed by recommendations for research and industrial action, and these recommendations if acceptable, translated consistently and aggressively into day-by-day usage in both industries.

I know that such an undertaking is a very big job and involves agreement and participation by many people. But let us not be deterred by that fact that if we agree that pooling of our interest is in truth logical and mutually acceptable.

### Refrigerated Warehousing Industry Research

The refrigerated warehousing industry, during six years, expended over $350,000 in research and technical action by its foundation, about half of which went into grants for investigations, primarily on commodity behavior while in storage. It is not a prodigous sum but it is substantial one and within our means since we are not a wealthy industry.

A little over a year ago, with the counsel of business and academic leaders, I estimated that the tangible and intangible annual values of this industrial research program were conservatively in the magnitude of what we might expect in monetary return from an annual investment of $50,000,000 at 5 percent interest. Since we actually expended a little more than 1/10 of 1 per cent of this sum annually, I then asked our industry members present at the discussion, whether they agreed in the truth of the late Tom Rector's classic remark: "Research is the only respectable undertaking that eventually pays off like a racket."

Your industry would presumably like to produce and sell more seafoods; our industry would like to help you refrigerate and store those products in optimum condition to the end that there would be still better seafoods for more consumers.

### Foundation Offers Joint Action

The Foundation is prepared to examine actively with you the prospect of doing this by improvements in technology involving refrigeration and to determine the mode of subsequent action, whether by reasearch, industrial education or other undertaking, if you are inclined to such joint action or mutual interest.

## U. S. Surveys Show Increase in Poundage and Value of Fish Taken by Commercial Fishermen

Prior to 1929, surveys of fisheries by the Fish and Wildlife Service of the United States Department of the Interior were sporadic, and there was not sufficient data to arrive at annual production figures for the entire country. Since that time there has been sufficient data to arrive at annual catch statistics, and in most years to determine the value of the catch.

The table below lists the poundage of fish taken by United States and Alaska commercial fishermen during the years for 1929 to 1940 inclusive. The value to fishermen in dollars is shown for each year except for 1929 and the years from 1933 to 1939 inclusive, during which time these statistics were not compiled.

Available information indicates that in 1880—when the first complete survey of the fishing industry was made, the annual catch amounted to about 1.5 billion pounds. By 1900, the production averaged about 2 billion pounds annually, and by 1920 it had increased to about 2.5 billion pounds.

The table shows a considerable increase in the poundage, and a much greater increase in value since 1930.

UNITED STATES AND ALASKA FISHERIES —SUMMARY OF TOTAL CATCH AND VALUES *1929* TO *1949*

| Year | Quantity (1,000 lbs.) | Value to Fishermen (1,000 dollars) |
|---|---|---|
| 1929 | 3,567,000 | (1) |
| 1930 | 3,286,580 | 109,349 |
| 1931 | 2,657,317 | 77,344 |
| 1932 | 2,634,704 | 55,532 |
| 1933 | 2,933,000 | (1) |
| 1934 | 4,058,000 | (1) |
| 1935 | 4,066,000 | (1) |
| 1936 | 4,760,000 | (1) |
| 1937 | 4,352,549 | 100,845 |
| 1938 | 4,253,445 | 93,547 |
| 1939 | 4,443,328 | 96,532 |
| 1940 | 4,059,524 | 98,957 |
| 1941 | 5,080,341 | 134,172 |
| 1942 | 3,876,524 | 170,338 |
| 1943 | 4,202,000 | 204,000 |
| 1944 | 4,500,000 | 213,000 |
| 1945 | 4,575,500 | 269,900 |
| 1946 | 4,456,000 | 310,000 |
| 1947 | 4,344,000 | 307,600 |
| 1948 (prel.) | 4,575,000 | 367,000 |
| 1949 (prel.) | 4,900,000 | 325,000 |

[1] Data not available

# PACKING PLANT ADDS FREEZER

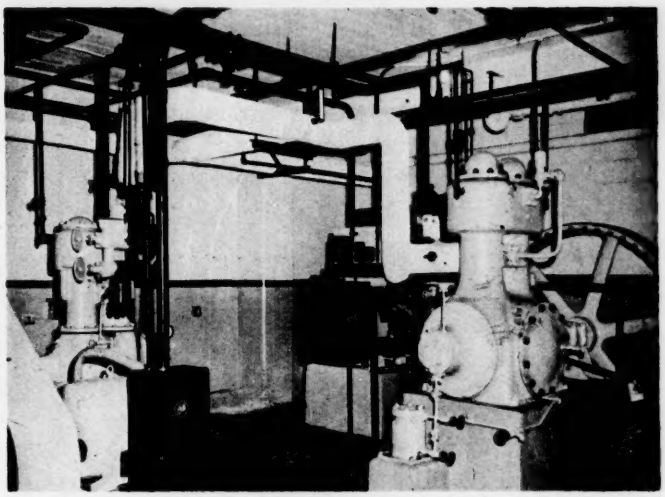
***Quarter-million dollar addition to branch plant provides additional freezer and storage capacity.***

THE opening of a quarter-million dollar addition to the Los Angeles, Calif. branch of the meat packing firm of John Morrell & Co. was observed last December with an open house which attracted 6,000 people.

According to Lee T. Crouch, longtime manager of the branch, the addition will enable the company to handle additional volume and give better service to customers in the Los Angeles area. The branch now handles and processes approximately $8,000,000 worth of meat a year for this area and employs about 80 persons. It is equipped to smoke a quarter of a million pounds of hams, picnics and bacon per week.

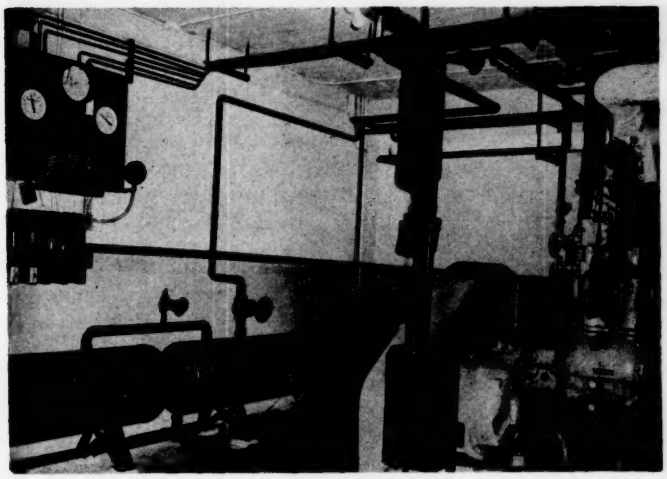
Freezer capacity for 75,000 pounds of meat is provided in addition to refrigerated storage rooms for canned meats and provisions. The branch can slice 200,000-250,000 pounds of bacon per week.

New construction gives the branch house two-thirds more floor space than formerly, adding approximately 20,000 square feet to the older building. The construction matches the old, being of reinforced concrete and brick. Six additional truck loading docks are available and unloading spots for two additional railroad cars are provided.



*In the compressor room showing two York compressors. The one on the left is a 7½ x 7½ in. two-cylinder single acting vertical with capacity of 28 tons at 20 lbs. per sq. in. gage suction and 323 rpm driven by a 40 hp motor. At the right is a 9 x 9 in. two-cylinder single acting vertical compressor with capacity of 15 tons at 20 psig suction and 100 rpm, driven by a 20 hp motor.*

The addition was built on an area 80 by 140 feet and consists of a basement and first floor. The basement houses modern locker and toilet facilities for both men and women, an air conditioned bacon slicing and packing room, a slab bacon holding-freezer and a fresh meat holding-freezer, as well as some space for storage of supplies. The first floor adds to the shipping area, provides space for storage of several carloads of supplies or warehouse stock and a new smoked meat hanging and packing room.



*Two liquor receivers and new compressor. The pressure recorder at the top of the panel board automatically records both the suction and condenser pressures.*

### Refrigerating Equipment

The refrigeration system for the old building was completely overhauled and modernized at the same time the installation was put in the new building. One new ammonia compressor was provided, with a rated capacity of approximately 27 tons per day. Offices were partially remodeled and completely redecorated.

The refrigeration equipment was installed by York Corp. and includes a 7½ in. x 7½ in. enclosed type 2-cylinder compressor in addition to the present 9 in. x 9 in., which brings the total refrigeration capacity of the branch to approximately 45 tons. Op-

eration of the compressors is so arranged as to be entirely automatic, the new compressor carrying its capacity before starting the other unit on heavy loads. A new evaporative condenser was installed on the roof, and the cooling tower and condensers which were formerly used were removed.

The refrigerated portions of the addition include an air conditioned bacon slicing and packing room on the basement floor together with a slab bacon holding freezer and a fresh meat holding freezer. On the main floor a new smoked meat hanging cooler has been provided. A total of 81,000 cubic feet of refrigerated space has been added, of which 25,400 cubic feet is in freezers.

Room cooling is accomplished by use of both dry and wet cooling units, finned ceiling coils and also plain pipe coils. Hair felt covering has been used for all refrigeration pipe insulation.

### Established in 1922

Now the oldest and fifth largest of America's meat packing firms, John Morrell & Co. has been operating in Los Angeles since 1922. Mr. Crouch has been manager since 1931.

*(Continued on page 64)*

*Refrigerated portions of new Morrell addition at Los Angeles, Calif. Upper left: Smoked meat hanging cooler on the main floor. Lower left: Air conditioned bacon slicing and packing room on the basement floor. Above: Fresh meat holding freezer on the basement floor.*

# THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES



*Executive Offices*
1706 L St. N. W., Washington, D.C.

*Executive Secretary*
Mount Taylor, Washington, D.C.

*President*
H. O. McLain, Chicago, Ill.

*First Vice-president*
E. F. Condon, Los Angeles, Calif.

*Second Vice-president*
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*Treasurer*
Geo. Steers, Jr., Kalamazoo, Mich.


## THIS MONTH IN BRIEF

**Future administration of Wage-Hour Act will be in the hands of Secretary of Labor, and present indications are that any liberalization will be kept to a minimum.**

**Survey by National Association of Ice Industries shows that nearly one-half of the thirty million owners of mechanical refrigerators use ice. A plan has been formulated to make closer contact with this market.**

**Training program for Indiana ice service men, inaugurated by The Indiana Association of Ice Industries trains them to sell.**

**Backed by a proclamation by the Governor, Texas Ice Day was observed in the State of Texas May 17, with big sales of ice appliances.**

**Reports from unit ice associations show increased selling activities. Merchandising forums organized — ice exhibits — training for employees.**

**Survey in Texas shows changes in the ice market. Purchasing power and weather are chief factors affecting sales of ice.**

# Wage Hour Act Now Under Secretary of Labor

***Reorganization kills independent status, but coverage remains virtually same. Stringent enforcement drive expected.***

ON MAY 23, a bulletin from the General Counsel of the National Association of Ice Industries states, the President succeeded in his efforts to eliminate the previously independent status of the Wage-Hour Administrator by having his Reorganization Plan No. 6 slide through Congress; thereby, placing the future administration of the Act in the hands of the Secretary of Labor who, pursuant to the Statute that established the Department of Labor, is under oath to uphold, foster and protect the interests of labor. Just what wage-hour experience lies ahead for industry under the new management remains to be seen. Present thinking would seem to indicate that any liberalization in interpreting and applying the new Act will be kept to a minimum. Moreover, due to a greatly increased budget, a much wider and more stringent drive by the Department, in the matter of enforcement, is being predicted.

### New Interpretative Bulletin

The first of a two-part interpretative bulletin on coverage of employes under the New Wage-Hour Law has been released. It is reported that a second sequel is to follow at a later date.

As under the old law, coverage of the New Act exists only when Interstate Commerce is involved. For interstate commerce to exist there must be the production of goods either "in" commerce or "for" commerce—plus an added area of so-called "fringe" activities embraced in the definition of "closely related" and "directly essential" to the production of goods for commerce. (This latter language was incorporated in the new law as a substitute for the term "necessary" to the production of goods for commerce as contained in the old Act.)

A careful review of the new interpretative bulletin indicates clearly that although some effort may have been made to narrow coverage, the fact remains that little, if any, restriction has been accomplished. Generally speaking, it is safe to say that coverage under the new Act is virtually the same as under the old law. The following are the principal high lights of the new interpretative bulletin.

### General Rules of Coverage

*Employee test:* Coverage, as heretofore, of any employee is governed entirely by the work performed by the individual employee and not by the business or activity of his employer.

*Amount of Interstate work:* Neither the amount of interstate work performed by the employee nor the amount of the employer's interstate business determines coverage. So long as the interstate work is regular and recurring, even though the amount is a fraction of one per cent of the total, the employee is covered.

*Workweek unit of measure:* The single workweek (seven consecutive days) is still used as the unit in measuring coverage. If an employee spends any part of a week doing covered work, he is under the Act for the entire week. On the other hand,

an employee may be under one week and not under the following week. What he (the employee) does each week determines whether or not he is covered for that particular week.

*Method of payment:* The minimum hourly wage rate required by the Act, for any covered employee, is 75 cents per hour for the first 40 hours of work performed during any one week. For all hours worked in excess of 40 the employee must be paid a minimum of $1.12½ per hour (one and one-half times the 75c). An employee earning $1.00 per hour must be paid $1.50 per hour for each worked in excess of 40 hours.

Regardless of what pay system an employer uses, daily, weekly, piecerate, semi-monthly or monthly salary, etc., the Act requires that an employee's compensation must be reduced to an hourly rate for purposes of computing his overtime.

### Employees Producing Goods "For Commerce"

Fundamentally, the views of the Administrator as to the meaning of the term "producing goods for commerce," as used in the new Law, are the same for coverage determination as those prescribed by him under the old Law with one exception—those dealing with the so-called "fringe" occupations of "closely related" and "directly essential" to the production of goods for commerce. Herein, is created a "twilight zone" out of which may come troublesome problems requiring Court determinations.

The Administrator points out that in his opinion, the terms "closely related" and "directly essential" are such as to describe a situation in which, under all the facts and circumstances, an employee's occupation is shown to bear a relationship to the production of goods "for commerce" (a) that may reasonably be considered close, as distinguished from remote, and (b) in which the employee's work directly aids production by providing something essential to the carrying on, in an effective, efficient and satisfactory manner, an employer's operations for producing the goods "for commerce."

The Administrator further points out that an activity may be considered "closely related" but not "directly essential" and visa versa. For coverage to apply as a result of these vague and indeterminate factors, it would seem that they must exist in combination and not singularly.

(NOTE: Concerning the foregoing Interpretative Bulletin, plus other existing or future ones to be released, it should be remembered that they do not represent the final or binding legal interpretation of the Wage-Hour Law. These determinations can come only from the Courts. However, the views expressed serve as guides and will provide the basis for an employer's defense in a suit against him if he, "in good faith," has relied upon said guides.)

### Changes in Record Keeping

Sweeping changes in the regulations governing the keeping of records, on all employees covered by the new Wage-Hour Law have been adopted. They became effective on June 19 and employers are reminded that even though they are in strict compliance with all other requirements of the Act, their failure to keep proper records, as prescribed, places them in open violation and subjects them to harsh penalties of the Law. The Administrator has repeatedly reported that one of his most frequently discovered violations is the failure of employers to maintain accurate records. According to the announcement accompanying the newly adopted regulations, a concerted drive is to be made against the continuation of this careless or inadvertent practice on the part of employers.

The regulations, like many government documents, are lengthy. However, they are reasonably clear and understandable requiring no special explanations. Copies are readily available at all Wage-Hour field offices. Copies also may be obtained from the National Association office.

The important thing to remember is that the employer has no legal redress for failure to maintain records on each and every one of the employees covered by the Wage-Hour Law. Neither ignorance of the Law's requirement nor any other excuse is sufficient explanation to free him of this obligation. The Act provides an absolute right to inspect employer's records, at all reasonable times, even though there exists no specific knowledge of, or reason to believe, he is guilty of any violation.

### Bulletin on "Retail" Exemption

As yet, the bulletin giving the Division's interpretation of the meaning and scope of the "retail" exemption as provided in the new Act, has not been issued. Presumably, confusion continues to exist as to how the exemption is to be interpreted. As soon as the bulletin is issued the industry will promptly be apprised of its contents.

In the meantime, the ice industry, throughout, remains united and firm in its concept as to the recognized and long established industry practice relative to what constitutes a "retail" sale of ice. This concept is that all sales of ice are retail sales except those made for purposes of resale. Only those sales for resale are considered and recognized as wholesale.

### Retail Ice Sales

Regardless of what the forthcoming bulletin may have to say about "retail" (ice) sales, the language of the Act states:

"The provisions of Section 6 and 7 (Section 6 refers to minimum wages —Section 7 refers to maximum hours —this explanatory parenthetical insert added) shall not apply with respect to . . . (4) Any employee employed by an establishment which qualifies as an exempt retail establishment under clause (2) of this subsection, and is recognized as a retail establishment in the particular industry, notwithstanding that such establishment makes or processes at the establishment the goods that it sells."

For the ice industry to receive its greatest, and certainly its clearly legitimate benefits from the foregoing quoted language of the new Wage-Hour Law, it must stand together in defending the long established and recognized custom and practice as to what is considered "retail" selling throughout the entire industry.

## Grocers Shown Value of Ice for Vegetables and Fruits

ACQUAINTING vegetable and fruit growers with the value of icing vegetables and fruits, the Rhode Island State College Extension Division has been conducting classes on the handling of fruits and vegetables. The classes have been held at the Providence Fruit and Vegetable Exchange, conducted under the direction of Prof. W. E. Lomasney of the Rhode Island State College.

A two-day meeting was held May 17 and 18 at the college and at the college farm. At this meeting the value of icing vegetables and fruits, also poultry, was stressed. On the second day organization of training schools was described. The ice film, "Naturally Yours" and another movie, "Selling Produce" was shown. The Rhode Island, Chaffee and Holmes Ice Companies cooperated with the college in this program.

# Do Mechanical Owners Use Ice? YES Says Results of Survey

***Nearly half of the thirty million of them do buy ice,—about two million tons a year. This can be increased to 8 to 10 million tons if made available and advertised***

THAT mechanical owners offer a rich potential market for increased premium ice tonnage is disclosed by results of a survey conducted by the National Association of Ice Industries. It shows how many of these people are now buying prepared ice. It tells their buying habits, motives and desires. It provides information needed by ice distributors to analyze their markets and indicates the type of merchandising activity needed to get best results.

There are now in use nearly 30 million household mechanical refrigerators. The survey shows that nearly one-half (48 percent) of them are now buyers of ice for auxiliary use to the tune of about two million tons per year. This means that the ice industry now has a new market of nearly fifty million mechanical users, 90 percent of whom are now buying ice from once a week to once a month. Twenty-six percent buy it at least once a week in summer; in winter months the total number of mechanical user buyers decreases about one half, but 22 percent of those who use ice in winter buy it once a week.

**For some time progressive ice distributors have been interested in knowing more about the use of ice by owners of mechanical refrigerators. To procure this information the Research Department and the Personnel Training and Marketing Department of the National Association of Ice Industries, with the assistance of 35 ice companies located in all geographic areas and in various sized cities, conducted a survey in which almost 5,000 homes were visited. The objects of the survey were to find out to what extent mechanical refrigerator owners are or could become customers for prepared ice. A preliminary report was made at the National ice convention last fall and later summarized in the March issue of ICE AND REFRIGERATION. Now the results of the survey have been published in complete form and the important conclusions are presented in this article.**

## Market Can Be Increased

This market is a profitable one for the ice industry but it can be made many times more profitable by making ice available where and when these customers want it and letting them know when and where it can be purchased.

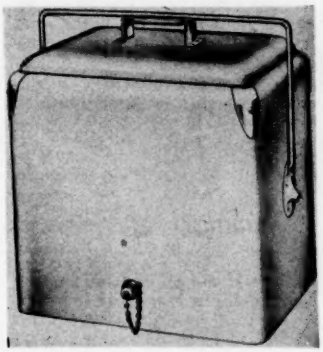
How can that be done? It can be accomplished by two methods which must work simultaneously as one merchandising operation.

*First,* make prepared ice readily accessible at all times to these special buyers through sanitary, courteous, efficient methods of distribution.

*Second,* advertise, publicize, and continually tell mechanical users, through every conceivable means at local command, of this avilability of clean, hard-frozen, taste-free ice (crushed, cubed, or sized) for their convenience and special uses.

Nearly 15 million mechanical owners are ice customers. With exception of a few aggressive ice companies, these people are still customers despite the fact that no particular effort has been made to get their business, despite the fact that all too often they actually have to hunt a source of supply which is generally located most inconveniently.

If these millions of mechanical users have themselves discovered a need for ice and are buying nearly two million tons of it a year, under merchandising conditions that have prevailed in the field in the ice industry for years—then it follows that a huge market exists here for premium business—possibly as much as 8 to 10 million tons. This market can be capitalized upon by ice companies everywhere—when they go after the business, using the method of distribution that fits the particular market on the most practical, efficient, economical basis—to increase the number and frequency of unit purchases.



*This portable cooler made especially for holding crushed ice makes a very satisfactory receptacle for auxiliary ice—crushed, sized or cubes.—Courtesy Progress Refrigerator Co.*

## Reasons for Buying Ice

The survey shows that 48 percent of all mechanical users presently buy ice for three principal reasons: parties, picnics, and ice cream making. There is wide variance in percentages —ranging from under 20 percent in one market to over 80 percent in another. Geographic area and size of market affects the percentage of purchasers in several respects.

It is axiomatic, however, that the larger percentages of these ice buy-

Information for this article was obtained from a bulletin issued by the Personnel Training and Marketing Department of the National Association of Ice Industries.

ers are found in markets where the source of supply for prepared ice is well-known by the mechanical user —and also where the ice company has vigorously sought this business.

For instance, in towns under 10,000 population everybody knows where the ice plant is located. Seventy-one percent of mechanical users in such towns, according to the survey, do buy ice, and 91 percent of them buy at the plant. However, in cities over a million population, only 44 percent of mechanical users are buyers of ice, and place of purchase is spread over eight channels of distribution.

Buying motives vary some in these different size markets, but the general motive pattern is the same. They buy mostly for parties, secondly for picnics, thirdly for ice cream making. This would certainly seem to lend strength to the contention that accessibility of prepared ice is the starting point in getting into the mechanical user business. People in small communities usually have ice readily available, and they know where to get it. That is not always true in metropolitan areas.

The results of this survey can be extremely valuable in evaluating the profit possibilities of inaugurating an aggressive prepared ice merchandising program to mechanical users. While the national averages, and those based on population may not reflect the actual conditions in each individual ice market in the country, they do serve as a pattern—a guide to stimulate thinking as to how this premium market can be used. Close study of the figures will suggest where and how the ice should be made available in each market, size and type of package most acceptable, type of prepared ice most desired, time of purchase, possibility of selling holding equipment, frequency of purchase, whether ice should be delivered, and answers to other important questions.

For practical use of this survey, select your market size in the table showing detailed answers to the questions. Compare what you are doing in the mechanical field with what the survey indicates is being accomplished by others in percentage and frequency of purchase. Then figure what it would mean to your profit account if you were attracting as much or more of this premium tonnage.

## Summary of Answers to Questions in Survey

### Do the Users of Mechanical Refrigerators Buy Ice?

For the country as a whole, of the 4704 people who were asked, 48 percent or almost one out of every two buy ice for certain uses. The percentages ranged from above 80 in some markets to below 20 in others. With the exception of cities of a population of between 10,000 and 100,000 a larger percentage of people in the smaller markets buy ice. By areas, 79 percent of the people interviewed in the Southwest and over 50 percent of those questioned in the Southeast and Lake States buy processed ice. The smallest percentage was found in New England where only 27 percent purchase ice.

### Where Do They Buy It?

Seven percent of the 2345 who replied to this question stated that the ice is purchased from an ice delivery route. In some cities the percentage was as high as 17. In others it was as low as 3.

Sixty-one percent of the people surveyed stated that the ice was purchased at the ice plant and 14 percent bought from retail stations. As might be expected, in the small markets, most of the ice is purchased from the ice plant. In larger cities, retail outlets are more important as sources of supply. By areas the Southeast, Lake States Middle Atlantic and Midwest are the largest purchasers from ice plants. In New England 77 percent of the customers stated that they buy from retail outlets. Substantial quantities are sold through such outlets in the Southwest, Midwest and Far West.

For the country as a whole, it is significant that 93 percent buy from sources from which they customarily carry the ice home. Of this number almost two-thirds buy from the ice plant, which in most cases is located as a manufacturing operation rather than a merchandising establishment. In other words, convenience of the customer was not a deciding factor in the plant's location.

### If You Do Not Buy Ice, Why Not?

Of the 2400 who answered the question why they do not buy ice, 61 percent indicated that they had enough ice and 30 percent had no use for it. The remaining 9 percent stated that they either borrow ice, do not know where to buy, find it inconvenient to purchase, or do not buy for some other reason.

### What Type of Ice Storage Equipment Do You Have?

In one market 52 percent of the people interviewed indicated that they had some type of ice chest. In another, 25 percent owned deep freezers. But for the country as a whole the results are quite different. Of the 4723 who replied, only 7 percent possessed ice chests and 6 percent owned freezers. Since equipment for holding the ice is lacking in most of the homes, the ice is purchased for immediate use. As a rule the family's insulated storage is limited to the space in their mechanical refrigerators. Because of the food load carried in the average household mechanical unit, it is doubtful if a large percentage of the ice purchased finds its way into this equipment.

### Why Do Mechanical Owners Buy Ice?

Since the mechanical unit ordinarily provides the family with its perishable food storage space and a limited supply of ice, purchases of prepared ice are usually for auxiliary needs. Forty-two percent of the 3138 replies indicated that the ice was purchased for special occasions like parties. Twenty-four and 19 percent respectively said that the ice was bought for picnics and for making ice cream.

The purposes for which the ice is bought varies considerably by size of city. Over 55 percent of the people in the cities of 500,000 and up buy for special occasions like parties, while only one-third of the people in markets under 10,000 stated that the ice was purchased for that purpose. Percentages of purchases for picnics and ice cream increased with a decline in the size of the city. These two reasons accounted for a maximum of 60 percent in markets of 10,000 or less.

Use of ice for parties appeared to be lower in the Southeast and Southwest than in any other sections. In New England, the Southwest and the Southeast more people than elsewhere stated that prepared ice was being bought to make ice cream. To summarize, 85 percent of the ice is used for the above three purposes, another 10 percent is for general home use and 5 percent for all other needs.

### How Often Do You Buy Prepared Ice?

The question was divided into two parts. The part dealing with summer requirements was answered by 1952 people. The section on winter buying habits received about half as many replies—935. Measured in terms of household ice customers who rely on ice for all of their refrigeration requirements, these people are infre-

quent purchasers. Of those who buy in summer, 40 percent buy once a month, 24 percent twice a month and 26 percent once a week. Actually 90 percent of them buy from once a week to once a month. In winter, if the number of answers can be taken as a criterion, the number of purchasers decreases somewhat over 50 percent and the pattern of buying changes. Fifty-six percent said they buy once a month, another 17 percent twice a month and 22 percent once a week. Ninety-five per cent of those who buy, buy from once a week to once a month.

### Would You Like a Delivery Ice Service Arrangement?

Service companies over the country have shown interest in establishing delivery routes as a means of serving this market. This prompted the next question, "If you had an ice chest in your kitchen or recreation room, which would hold a 2 or 3 day supply of ice, with dependable delivery service, would you buy ice regularly?" Despite the fact that in one or two of the large cities there was substantial interest in the regular delivery, generally speaking there was comparatively little interest in this service. By regions, greatest interest was shown in the Southwest and Far West where about one-fourth of the replies were positive. For the entire country, 4683 people replied. Eighty-seven percent stated that they would not be interested in this service. When asked why not, of the 4062 who answered, 48 percent said they had no regular use for the ice. Another 36 percent stated that they had enough ice. Eleven percent had no use for it, 2 percent felt that the service was too expensive and 3 percent gave some other reason.

When the purposes for which the ice is being bought are considered, these answers seem logical. The ice is being purchased for special occasions like parties, for picnics, and for making ice cream. Some families, of course, would engage in enough of these activities to warrant a continuous supply of prepared ice at all times, but the average family probably would not. It is interesting to note in passing that only 2 percent considered this service too expensive.

### If Ice Were Readily Available At Your Store, Would You Buy?

An effort was made here to get opinions on distribution of ice through retail stores. Despite the fact that the person is asked to commit herself on what she would buy and make the commitment to a representative of the local ice company, it is encouraging to note that over 12 percent more than those that are now buying indicated that they would buy.

### Where Would You Prefer To Buy Ice?

The customer was asked to indicate one or more of the following: Food store, delivered at home, vending machines, ice plant, retail ice stations, liquor store, drug store, other. Forty-three hundred sixty-three replied to the question. Twenty-six percent specified the food store, 27 percent would like it delivered, 19 percent indicated the ice plant, and 12 percent stated vending machines. The percentage for vending machines is brought down for the country as a whole because of the lack of knowledge of this unit due to its absence in some markets. In cities where the units have been extensively used, the percentages were relatively high.

Only 27 percent of all the replies specified a preference for delivery. Seventy-three percent designated outlets from which they would have to haul the ice home. Another exceedingly interesting angle to the question concerns the ice plant. Sixty-one percent of the people who use mechanical refrigerators and buy processed ice buy it at the ice plant. Consequently, as a group, they are more familiar with the ice plant than any other source of supply. Yet when these people were asked where they would prefer to buy their ice only 19 percent specified the ice plant. In effect, 27 percent would like it delivered, 19 percent are satisfied with the ice plant as a source of supply and 53 percent would like to have the ice distributed through stores, vending and retail stations. Eighty-one percent specified outlets which emphasize the convenience of either delivery to their homes or accessibility in shopping areas.

### What Type of Package Is Preferred?

Seventy-six percent of the 3937 replies favored the wet strength paper bag. The waxed carton ranked second with 19 percent. Only 1 percent of the replies preferred a cotton bag. Some interest was shown in the plastic bag in the limited number of markets where this package has been tried out.

### What Size Package Is Preferred?

This question gave the customer a choice of the following sizes: 100, 50, 25, 10, and 5 pound packages. Of the 4034 replies, the 25 pound package ranked first with 38 percent of the total replies. The 10 pound package was close second choice with 35 percent of the total. The 5 pound package was third with 20 percent, and the 50 pound container was preferred by only 7 percent. The 5 pound package was very popular in a few markets where the customers apparently have been exposed to aggressive selling and advertising of this unit.

### When is the Ice Usually Needed?

This question was designed to find out the time of day the users of mechanical refrigerators prefer to buy auxiliary ice. It, of course, should be remembered that equipment for keeping the ice after it is bought is definitely limited. Results revealed that 77 percent need the ice in the afternoon or evening. Nineteen percent stated that it was needed all day and only 4 percent expressed a need for it in the morning. It is obvious, therefore, that the method of serving these customers should take into account the need for making the ice readily available during the afternoon and evening.

### What Kind of Prepared Ice Customers Are the Owners of Domestic Mechanical Refrigerators?

Measured in terms of ice customers who rely entirely on ice for all of their refrigeration requirements, these people are small unit purchasers. When they were asked in what size package they would prefer processed ice, 93 percent of them were interested in quantities of 25 pounds or less. Only 7 percent of the answers displayed an interest in as much as 50 pounds.

When the results on size of package are considered along with the predominating frequency of purchase of once a week to once a month, it is apparent that the marketing method used in serving these people must be based on effectively reaching a large number who purchase in small quantities.

### Preference for Various Types Of Prepared Ice?

A question on the types of prepared ice was included in order to get some idea of consumer preference. Actually it is doubtful if the replies indicate very much more than the fact that people are quite generally acquainted with cubes plus some indication as to the types of ice that are being sold by the cooperating companies. The difference in the preference expressed is hardly important enough to be significant.

### Tabulation Shows Answers

The following tabulation shows detailed answers to the questions asked, for the country as a whole, and for various city population groups. Another table, not included here, shows the answers received from the seven geographic areas.

## Users of Mechanical Refrigerators as a Market for Prepared Ice

| Question | Number of Replies | Percent | Population of City: 1,000,000 and Over Percent | 1,000,000 to 500,000 Percent | 500,000 to 100,000 Percent | 100,000 to 10,000 Percent | Under 10,000 Percent |
|---|---|---|---|---|---|---|---|
| **Kind of refrigerator used?** | | | | | | | |
| Gas | 402 | 8 | 5 | 12 | 15 | 6 | 5 |
| Electric | 4321 | 92 | 95 | 88 | 85 | 94 | 95 |
| **Do you buy or have you ever bought crushed ice, sized ice, ice cubes?** | | | | | | | |
| Yes | 2275 | 48 | 44 | 51 | 62 | 44 | 70 |
| No | 2429 | 52 | 56 | 49 | 38 | 56 | 30 |
| **If yes, where do you buy?** | | | | | | | |
| Ice delivery route | 173 | 7 | 17 | 11 | 3 | 7 | 6 |
| Ice plant | 1441 | 61 | 41 | 37 | 48 | 69 | 91 |
| Retail station | 325 | 14 | 10 | 37 | 23 | 12 | 2 |
| Food store | 97 | 4 | 4 | 1 | 12 | 2 | 1 |
| Drug store | 59 | 3 | 2 | 4 | 5 | 1 | .. |
| Vending machine | 184 | 8 | 10 | 7 | 9 | 9 | .. |
| Liquor store | 23 | 1 | 8 | .. | .. | .. | .. |
| Other | 43 | 2 | 8 | 3 | .. | .. | .. |
| **If no, why have you never bought crushed ice, sized ice, ice cubes?** | | | | | | | |
| Have enough ice | 1454 | 61 | 42 | 60 | 70 | 64 | 58 |
| Have no use for it | 733 | 30 | 20 | 35 | 11 | 30 | 41 |
| Borrow additional ice | 48 | 2 | 5 | 3 | 15 | 1 | .. |
| Do you know where to buy | 104 | 4 | 19 | 1 | 4 | 3 | 1 |
| Inconvenient | 11 | 1 | .. | .. | .. | 1 | .. |
| Other | 50 | 2 | 13 | 1 | .. | 1 | .. |
| **What equipment or facilities do you have for keeping the ice you buy?** | | | | | | | |
| Ice Chest | 327 | 7 | 3 | 6 | 13 | 7 | 6 |
| Deep Freeze | 280 | 6 | 12 | 9 | 11 | 11 | 3 |
| **For what purpose do you usually purchase crushed ice, sized ice, cubes?** | | | | | | | |
| General home use | 329 | 10 | 15 | 3 | 15 | 11 | 5 |
| Special occasions | 1304 | 42 | 56 | 55 | 41 | 40 | 33 |
| Picnics | 755 | 24 | 12 | 25 | 26 | 24 | 31 |
| Ice Cream | 597 | 19 | 8 | 9 | 17 | 21 | 29 |
| Other | 153 | 5 | 9 | 8 | 1 | 4 | 2 |
| **How often do you buy ice in summer?** | | | | | | | |
| Daily | 22 | 1 | .. | 2 | .. | 2 | .. |
| Two or three times a week | 171 | 9 | 7 | 4 | 10 | 13 | 7 |
| Once a week | 500 | 26 | 33 | 24 | 34 | 20 | 26 |
| Twice a month | 471 | 24 | 14 | 25 | 27 | 22 | 24 |
| Once a month | 788 | 40 | 46 | 45 | 29 | 43 | 43 |
| **How often do you buy ice in winter?** | | | | | | | |
| Daily | .. | .. | .. | .. | .. | .. | .. |
| Two or three times a week | 48 | 5 | 1 | 6 | 4 | 6 | 2 |
| Once a week | 213 | 22 | 30 | 7 | 20 | 15 | 8 |
| Twice a month | 166 | 17 | 11 | 15 | 22 | 23 | 34 |
| Once a month | 538 | 56 | 57 | 72 | 54 | 56 | 56 |
| **If you had an ice chest holding a two or three day supply of ice, would you buy ice regularly?** | | | | | | | |
| Yes | 622 | 13 | 54 | 7 | 19 | 11 | 7 |
| No | 4061 | 87 | 46 | 93 | 81 | 89 | 93 |
| **If not, why would this service not appeal to you?** | | | | | | | |
| Do not have regular use for it | 1971 | 48 | 63 | 49 | 69 | 44 | 57 |
| Make enough ice for own needs | 1480 | 36 | 24 | 37 | 25 | 38 | 33 |
| Have no use for the ice | 437 | 11 | 2 | 6 | 4 | 13 | 8 |
| Too expensive | 77 | 2 | 4 | 6 | .. | 2 | 2 |
| Other | 97 | 3 | 7 | 2 | 2 | 3 | .. |
| **If crushed ice, sized ice, cubes were available at the stores at which you trade, how often would you buy?** | | | | | | | |
| In summer | | | | | | | |
| Daily | 28 | 1 | .. | .. | 2 | 2 | .. |
| Two or three times a week | 263 | 12 | 28 | 10 | 22 | 10 | 9 |
| Once a week | 505 | 24 | 25 | 25 | 32 | 23 | 29 |
| Twice a month | 495 | 24 | 19 | 25 | 21 | 21 | 23 |
| Once a month | 815 | 39 | 28 | 40 | 23 | 44 | 39 |
| In winter | | | | | | | |
| Daily | 5 | 5 | .. | 1 | 1 | 3 | .. |
| Two or three times a week | 53 | 5 | 8 | 5 | 5 | 7 | 1 |
| Once a week | 205 | 18 | 13 | 12 | 31 | 16 | 7 |
| Twice a month | 248 | 21 | 35 | 18 | 22 | 17 | 32 |
| Once a month | 657 | 56 | 44 | 54 | 41 | 57 | 60 |
| **Where would you prefer to buy crushed ice, sized ice cubes?** | | | | | | | |
| Food store | 1110 | 26 | 5 | 12 | 36 | 20 | 32 |
| Delivered at home | 1201 | 27 | 36 | 23 | 17 | 37 | 33 |
| Vending machines | 539 | 12 | 17 | 18 | 15 | 15 | 3 |
| Ice Plant | 841 | 19 | 26 | 11 | 15 | 22 | 28 |
| Retail ice station | 268 | 6 | 1 | 18 | 9 | 3 | 2 |
| Liquor store | 68 | 2 | 9 | 2 | 1 | 1 | 1 |
| Drug store | 294 | 7 | 1 | 14 | 7 | 2 | 1 |
| Other | 42 | 1 | 5 | 2 | .. | .. | .. |
| **What type of package preferred?** | | | | | | | |
| Water resistant paper bag | 2998 | 76 | 82 | 75 | 87 | 75 | 62 |
| Cotton bag | 49 | 1 | .. | .. | 1 | 1 | .. |
| Waxed carton | 727 | 19 | 17 | 24 | 5 | 22 | 38 |
| Other | 163 | 4 | 1 | 1 | 7 | 2 | .. |
| **What size package preferred?** | | | | | | | |
| 100 pounds | 14 | .. | .. | .. | .. | .. | .. |
| 50 pounds | 298 | 7 | 3 | 11 | 6 | 6 | 14 |
| 25 pounds | 1532 | 38 | 33 | 37 | 49 | 42 | 42 |
| 10 pounds | 1402 | 35 | 29 | 42 | 30 | 35 | 35 |
| 5 pounds | 788 | 20 | 35 | 10 | 15 | 17 | 9 |
| **When is ice usually needed?** | | | | | | | |
| Morning | 169 | 4 | 1 | 2 | 3 | 6 | 18 |
| Afternoon | 797 | 20 | 18 | 18 | 19 | 25 | 16 |
| Evening | 2319 | 57 | 55 | 67 | 69 | 49 | 46 |
| All day | 782 | 19 | 26 | 13 | 9 | 20 | 20 |
| **If crushed ice, sized ice, and cubes were available, packed in identical containers, which would you prefer?** | | | | | | | |
| Crushed ice | 1345 | 32 | 5 | 25 | 31 | 31 | 48 |
| Sized ice | 1160 | 28 | 20 | 14 | 53 | 31 | 32 |
| Cubes | 1677 | 40 | 75 | 61 | 16 | 38 | 20 |

# Bringing Survey of Mechanical Owners Down to Local Level

FOLLOWING up the national survey, on the use of ice by mechanical owners, two thoroughly conducted local studies show clearly that mechanical refrigerator owners in all income brackets can be profitable ice customers. In one of these local surveys, more than 600 owners were interviewed. More than two-thirds wanted auxiliary ice service of some kind. In another survey, 500 were interviewed and three-fourths of them said they would purchase auxiliary ice if available.

To make a firsthand reliable analysis of this market, the Research Department and the Personnel Training and Marketing Department have announced that they want to work with 50 or more ice companies located strategically over the country. Through the use of standard forms, each cooperating ice company would survey its own market. It then would have the facts on its own area which could be used in going after this business.

Through compiling the data collected by the various cooperating companies selected to represent the various geographic areas, the Research Department could summarize the material in order to determine and evaluate the national pattern. Then the Personnel Training and Marketing Department would have the facts upon which to plan and initiate a positive personal selling campaign beamed at local market. In addition, the Public Relations Department would have sufficient information with which to advertise and support the personal selling.

**Before any ice man can effectively go after sales to mechanical owners, he must know the market. He cannot assume that making this ice available from delivery truck, from the plant, or from a retail store is all that is needed. What is needed is to study and analyze this market on the local level. The ice man needs to know the nature of his local market; the buying habits of his customers, which are no longer the same as when they used ice refrigeration; the type of ice they need; the purposes for which it is purchased; the type of service wanted; and where and when they prefer to buy it. The national survey has provided overall answers to these questions. Local surveys will supply answers as they apply to that particular market.**

### The Plan

(1) The two Departments have developed a concise standardized questionnaire for use in all areas. A supply of these forms will be furnished to each company cooperating in the study.

(2) Each ice company will take the prepared schedules and survey its own market and make whatever summary it considers useful and make whatever use it chooses.

(3) All completed schedules of the local company will then be forwarded to the National Association not later than August 15, 1950. After tabulation, schedules will be returned to the company upon request.

(4) As rapidly as possible after that date (August 15, 1950) the Research Department will summarize and analyze the schedules from the various cities and prepare a national summary. This information will be placed in the hands of the Personnel Training and Marketing and Public Relations Departments and will be disseminated in any other manner considered helpful to the industry, but not in a manner which would reveal trade secrets in any market.

(5) It is the feeling of the Research and Marketing Departmental Committees that because of the nature of the study the work should be undertaken in warm weather and completed by the above deadline date.

Complete details covering the ways and means of conducting such a survey, including a sample questionnaire are given in the bulletin.

### Selecting Sample

It is suggested that 100 calls in each area will be adequate to determine the pattern. However, the method of selection is important. First of all, the study is primarily a study of the owners of mechanical refrigerators. Therefore, one or more sections of the city should be selected which may be classed as middle class and up. Then the interviewer should go into this area and go to one house in the first block. If he does not get an answer, he should try the next house and so on until he does get an answer. When he gets an answer, then he should proceed to another block. He should not get more than one answer per block, nor more than three on any one street. The calls should be well distributed throughout the area to be covered. If, for its own information, a company chooses to conduct a much more intensive survey, the additional calls, of course, would give a larger sample which doubtless would substantiate the data of the smaller sample.

As "handouts" to gain attention a package of ice or cubes; card which will entitle customer to small bag of ice or cubes; "Money Saving Tips on Marketing;" brochure on ice chest or other equipment, are suggested.

## Consolidated Ice Sold to City Products Corp.

SALE of the Consolidated Ice Co., Pittsburgh, Pa., to City Products Corp., of Chicago, has been approved by Consolidated stockholders, according to H. Stewart Dunn, president. The business will be operated as Consolidated Ice Division of City Products, Mr. Dunn said. The Forty-third Street plant will be closed but the other four will continue to operate, he indicated.

Financial details of the sale were not made known. Consolidated has an authorized capital of $1,100,000, consisting of 40,000 shares of cumulative preferred and 80,000 shares of $1 par common. Consolidated Ice Co. was incorporated in 1899 following a merger between Chautauqua Lake Ice Co. and Eureka Ice Co., which was founded by Captain Thomas M. Reese and Thomas A. Dunn, father of the present head of the firm.

# Indiana Trains Ice Service Men–
## Tells and Shows Them How to Sell

RECOGNIZING that the continued prosperity of the ice business is contingent upon excellence of ice service and an adequately trained sales force, the Indiana ice industries developed plans early in 1949 for a comprehensive state-wide training program for ice service men. Lacking qualified instructional personnel to carry on such training, Indiana University was called upon for assistance. The University Department of Distributive Education assigned a member of its staff to handle the training program.

G. Elwood Hookey was the man selected for this work. To bring him up-to-date, with authentic information, Mr. Hookey was sent for a course of instruction to the National Ice Marketing Institute in Washington, D. C. After completing this course he organized the Indiana course and set out to bring sales and service training to Indiana ice men.

The state was broken down into three sections, Northern, Central and Southern, with Mr. Hookey working four weeks in each section. Where company size did not warrant individual plant instruction, several companies met at a central location. During the period January 2 to April 25, training was conducted for over 800 Indiana ice service men, comprising approximately 75 percent of the Indiana industry. In all plants the training was received with remarkable enthusiasm, with maximum attendance at all plants.

Reports from ice companies participating in the program reveal startling facts. One representative company reports that during a two month period following their training program, sales of ice using appliances were five times greater than the similar period of 1949. Significantly, this was an off-season period. Other concerns made similar reports and the ice service men generally feel that it qualified them to do a much better selling job.

Owing to the huge success of the 1950 training program, this activity will be continued in 1951, and it is hoped that 100 percent participation will be obtained during the coming year.

*One of the sixteen groups participating in the Indiana Ice Service Men's training program. Companies represented are the Greensburg Ice Co., Greensburg; Daniel De Prez Manufacturing Co., Shelbyville; and Home City Ice Co., Aurora.*

## Indiana and Illinois Ice Men Graduate From Field School

THE Polar Ice & Fuel Company's plant in Indianapolis served as headquarters for the sixth session of the NAII Personnel Training and Marketing Field School, held the week of April 24-29.

Twelve men in supervisory positions at Indiana and Illinois ice companies attended the class. Their experience in the industry totalled 127 years. The following class officers were elected:

Richard C. Tuttle, Terre Haute Ice, Fuel & Cold Storage Corp., Terre Haute, president; Leland Lusk, Daniel DePrez Manufacturing Company, Shelbyville, vice president; Charles F. Scheidler, Greensburg Ice Company, Greensburg, secretary; and Orwood Wilson, Pearl Packing Company, Madison, treasurer.

The special lecturers included four college faculty members and one ice company official. With their subjects, they were: Dean L. Gray Burdin, "Human Relations;" Dr. George P. Rice, "Public Speaking;" and R. Harold Van Cleave, "Merchandising"—all three from Butler University; G. Elwood Hookey, Indiana University, "Job Demonstration Techniques;" and R. H. Landing, Hoosier Ice & Coal Company, Michigan City, Indiana, "Vegetable Icing."

The class was visited by C. D. Knight and Robert W. Walton, president and secretary, respectively, of the Indiana Association of Ice Industries, and Henry L. Dithmer and Roger Catts, both of the Polar Ice and Fuel Company, Indianapolis.

Walton presented certificates of graduation at a final luncheon, held at the Hawthorne Room. In addi-

*Members of Field School held at Indianapolis April 24-29. Robert Walton, secretary of Indiana Association is at extreme right.*

*(Continued on page 64)*

"GLAMOR-ICE" YOUR MEALS!
Pure, sparkling manufactured ice can lend a party touch to ordinary dishes that will amaze you! And only manufactured ice can do it, because cold alone is not enough! Foods stay fresher, keep vitamin content longer, look better, taste better... when they're kept in the cold-plus-moisture that only ice refrigeration can give you.
TEXAS ICE DAY - MAY 17
100 years of progress for the vitally important ice industry

*One of the newspaper advertisements used to publicize Texas Ice Day, May 17.*

# Ice Day in Texas Sells 1,000 Appliances

BACKED by Governor Allan Shivers' proclamation naming Wednesday, May 17 Texas Ice Day, the Texas ice industry went all out in observing it. Among concrete results, the amazing total of nearly 1,000 appliances were sold by ice companies all over the State of Texas. These appliances included domestic and commercial refrigerators, ice chests, vegetable cases, picnic chests, ice cream freezers, water coolers, fish and poultry cases.

The major purposes of the event were to call to the attention of the people of Texas the importance of the Texas ice industry; to publicize the sound claims to superiority of ice service; to start the selling season, backed up with ice and ice-using appliances.

## Idea Born in March

The idea of Texas Ice Day originated in the annual Sales and Service Conference held in Waco in March. It was accepted enthusiastically by progressive members of the industry and plans were developed to make of it a complete success. The program embodied the following main features:

Designating May 17 as Texas Ice Day.

Declaration by the Governor announcing Texas Ice Day, and acknowledging the importance of the ice industry.

A series of six publicity articles distributed to all newspapers, explaining the purpose and plans.

A series of three small newspaper advertisements, and one either half or full page advertisement.

Meetings, either by companies or by area or market groups, of ice men and their wives on the eve of Texas Ice Day.

A plan for all participating to place at least one ice-using appliance in the home or place of business on each route.

### Texas Ice Day in Brief

**Plan of the Campaign**

1—Designation of "Texas Ice Day" by proclamation of the Governor.

2—Publicity articles to newspapers.

3—Newspaper advertisements.

4—Company meetings on eve of Texas Ice Day.

5—Asking each employee to sell at least one appliance.

**The Result**

1—Nearly 1000 ice-using appliances were sold with a money value of around 50,000 dollars.

2—Proof that there is a big market for refrigerators and other ice-using appliances.

3—2,000 ice men and women attended special company meetings.

4—Newspaper publicity, articles and advertisements reach a reader audience of approximately three million readers.

## Publicizes Ice Industry

While this program, as outlined above, was a relatively short-lived publicity stunt, it did publicize the importance of the ice industry and gave to Texas ice men themselves a shot in the arm and made a fine initiation for the new ice season. To all ice men who are at all merchandise minded, the program carried a new enthusiasm and determination.

One of the pleasing developments was the cooperation shown toward the ice industry and the men and women connected with it, as expressed by the newspapers. The publicity articles prepared by the association were published, and in addition numerous friendly editorial comments were made. There can be no doubt that the ice industry has a reservoir on the part of the press and readers upon which it can freely draw. The Governor's Proclamation was published throughout the state and this is a document that has taken its place among the most valuable of the archives of the Texas ice industry.

In addition to the publicity articles, display advertisements were carried in newspapers published in more than 100 Texas cities and towns. It is estimated that these newspapers reached approximately three million readers. Through its Advertising and Publicity Department, the National Association of Ice Industries distributed literature on the Texas ice day carried by the Texas News Service and newscasters. In addition, Texas ice day and the Texas ice industry were mentioned over the Mutual Radio Network in Dallas, Fort Worth and Austin areas and commercialized on the Fulton Lewis program sponsored by the Southland Corporation.

### 200 Company Meetings

The phase of the program calling for meetings among ice company personnel on the eve of Texas ice day was responded to by about 200 companies and these meetings were attended by something like 2000 men and women of the Texas ice industry.

That the effect of this special observance was felt outside of Texas was shown in a telegram received from Mount Taylor, executive secretary of the National Association of Ice Industries sent to the Southwestern Association office during a meeting of the Board of Directors of the National association. The telegram read: "By unanimous resolution the Board of Directors of the National Association heartily commends and congratulates you and the Southwestern Association on the development and effective handling of Texas ice day. You have set a splendid example for other state associations."

Probably the most striking tangible accomplishment of this unusual program was the response to the call for every ice service salesman to place at least one ice-using appliance in the home or place of business on Texas ice day. Total preliminary reports of sales showed that nearly 1,000 units were sold by the reporting companies and the money value of these units was around fifty thousand dollars. This achievement, unique though it may be, should set at rest any doubt that there is a great undeveloped market for ice-using appliances of all kinds.

Domestic refrigerator sales were surprisingly good, about one-third of all units sold. These included not only the less expensive units but the larger models as well, including the new executive-type stainless steel number recently put on the market by one of the leading refrigerator manufacturers. Commercial refrigerators also were placed with encouraging success. This experience seems to confirm the belief held for many years by many progressive ice merchandisers that there is a big market for large commercial refrigerators and for the year-round use of ice to service them.

Water coolers sold ranged all the way from thermos jugs to the bottle and coil type of cooler to the industrial water connected bubbler type. Ice chests were sold in considerable number. Sales of picnic chests by many companies exhausted the supply. Commercial type chests were placed in an encouraging number. Fish and poultry cases and vegetable display counters were moved in encouraging numbers.

A great share of the credit for the success of Texas Ice Day is due to the representatives of appliance manufacturers. "Guffie" Williams of Ice Cooling Appliance Corp., Ed Elliott of Progress Refrigerator Co., and Joe Ballard and Mel Kruse of Amarillo Iced Display Manufacturing Co. assisted greatly in spreading the enthusiasm for the program and in making the appliances available.

The publicity and advertising part of the program were handled by the McCrary Advertising Agency of Dallas. The advertisements prepared by this agency struck a responsive note, not only in the industry, but on the part of the public as well. The publicity articles prepared and distributed to the newspapers carried the many phases of the story of the ice industry and of ice service.

## Paul J.Anderson Honored At Surprise Party

ALL of the friends of Paul J. Anderson who are members of the Chicago District Ice Association and associated with him in the ice business gathered at a luncheon party at the Butterfield Country Club on June 14 in honor of his birthday and surprised him with a gift of a watch and a beautiful diamond studded chain together with a large television console set. Mr. Anderson owns and operated the City Ice Supply Co. of East Chicago, Ind., and the Fulton Pure Ice Co. in Chicago.

Mr. Anderson was honored in recognition of his many contributions to the welfare of the ice industry and the high esteem in which he is held by his friends and competitors in that business. The presentation was made on behalf of the ice association by Paul R. Barboro and many of those present made laudatory comments on the sterling qualities of their friend, among which was a humorous poem which was printed and sent to every member.

## Refrigerator Portfolios for Canadian Salesmen

A NUMBER of ice companies have done such a successful job in selling ice refrigerators from actual photographs, that the necessary material is being made available to all members of the Canadian Association of Ice Industries.

The presentation consists of a hard-bound ring binder; actual 8 x 10 inch glossy photographs of all refrigerator models available; and transparent celluloid sheets for protecting these photos from soil and damage. On the back of each photo the ice dealer attaches a typewritten slip giving specifications, price and terms of the model (which is seen through the celluloid protector.)

With this handsome and impressive portfolio the routeman or representative can really do a professional job of canvassing right in the home. Photos of all Renfrew, General Steel Wares and Paris models are available in this service, both open and closed, plus the Renfrew Portable Ice Refrigerator.

## Ice Company Has Fiftieth Birthday in 1950

THE Home Ice & Fuel Co. at Elwood, Ind. is currently observing its fiftieth birthday, having been founded May 1900. The original incorporators were Thomas Conner, Gustave Kramer, B. J. Fettig and Patrick Bradley, all now deceased. It was then called the Home Storage and Manufacturing Company and a supply of natural ice was harvested from local lakes.

The present officers of the firm are: president, Joseph A. Dehority; vice president, Frank McCarthy; secretary-treasurer, J. J. Conner; manager, John W. Magers; assistants, Agnes Quirk and Mrs. Conner.

## County Agents Learn About Icing Farm Products

A MEETING of all county agents of Rhode Island and Southeastern Massachusetts was held recently for a demonstration of icing farm products in the field. The meeting was conducted by Prof. Lomasney of Rhode Island State College. The Rhode Island Ice Co. supplied the icing equipment.

# Reports from Unit Ice Associations

## Canadian Association of Ice Industries

By Mildred E. Croft, Secretary

FOR the first five months of 1950 the total ice tonnage for Canada appears to be just as good as that of 1949. This can be explained by the fact that we had a very open winter which accounted for increased tonnages over 1949, but these increases were off-set by an abnormally cool spring.

There is increased activity in the marketing of mechanical refrigerators and while some dealers are quite concerned over the increased sales, the more progressive ice dealers are redoubling their sales efforts by introducing rental plans and by offering attractive commissions to driver salesmen for refrigerator sales.

There is increased interest on the part of grocery and fruit merchants in vegetable icing. While all storekeepers are not buying new vegetable ice counters, there are a great many conversions of present equipment.

In the Toronto area some companies have introduced the milk case icer bag to the dairies and their use is becoming more widespread as the warm weather increases.

The faith of southern Ontario business men in the future of the ice business can perhaps be best indicated by the fact that there have been many new ice manufacturing plants erected in southern Ontario during the past winter and spring months.

## Cape Cod Ice Association

UNDER the leadership of W. A. Peirce of the Red River Ice Co., the Cape Cod Ice men have reactivated the Cape Cod Ice Association. Mr. Peirce was elected president; Homer Phinney of Hyannis, Vice-president and Harry Drew, West Chatham, Secretary and Treasurer.

This group has held four meetings with an average attendance of 18 out of a possible 28. The next meeting is scheduled for October 5. Subjects discussed at these meetings were: vegetable icing, iced poultry, modern service and sale of commercial and domestic refrigerators. Three films, "Retailing of Fish", the National Ice Association film, "Naturally Yours" and the Swift & Co. film, "Iced Poultry," were shown.

## Indiana Association of Ice Industries

Robert W. Walton, Exec.-Secy.

THE Indiana ice season has gotten off to a slow start due to abnormal spring temperatures. Tonnage in the first quarter of 1950 was off approximately 18 percent from 1949 first quarter tonnage. This decline is believed to be due to weather conditions and competitive forces.

Sales of ice using appliances have been generally better during the first quarter of 1950 than the first quarter of 1949.

We are now in the process of planning a completely integrated training program for the Indiana ice industry for 1951. This program will embrace training for ice service men, a supervisory school for management and a technical school for ice plant operating personnel.

## Supervisory Short Course

THE Indiana Association of Ice Industries, through its board of directors, has decided to investigate the possibilities of participating in a supervisory short course in cooperation with Indiana University. It is expected that this course will be conducted by G. Elwood Hookey who presented the Driver-Training program throughout Indiana so successfully. The course will be augmented by lectures by ice men who have attended the Institute.

The association also has under way organization of a plant engineers' short course through one of the universities in Indiana. The course will probably be of one week duration.

## Northwest Association Of Ice Industries

Ed. H. Shea, Exec.-sec.

THE late spring season in this section has considerably delayed start of the ice selling season. Reports regarding domestice ice sales from some dealers indicate a decrease in tonnage over last year of 15 to 30 percent while others expect that the average will balance up with the sales of last season. The weather seems to be the controlling factor of ice sales to domestic consumers and domestic sales for the balance of the season will depend very largely upon whether the summer is normally warm or cool.

## Ice Merchandising Forum Organized by Georgia

UNDER the direction of R. W. Florrid, executive secretary of the Georgia Ice Manufacturers Association, zone merchandising forums have been organized and three merchandising meetings have been held. A recent meeting of the merchandising forum was held at Atlanta. This meeting was attended by Dan Prager, of the National Association of Ice Industries who offered information on setting up these forums.

The State was divided into three zones for each of which there are committees on participating, program, and publicity. On the merchandising committee for the State association are Glenn Henderson, Augusta, chairman; W. E. Adcock, Dalton; M. A. Morrison, Atlanta; A. B. Keyton, Thomasville; and Lambert Williams, Claxton. M. A. Morrison is chairman for the Atlanta zone; A. B. Keyton for the Thomasville zone and Lambert Williams for

## Indiana Merchandising Forum

A STATE-WIDE meeting of the Indiana Ice Merchandising Forum was held at the Lincoln Hotel, Indianapolis, May 17, 1950. Commencing with a luncheon a number of subjects were discussed including renting refrigerators, local advertising, poultry and fish icing. One of the leading Indiana ice distributors reported that delivery service of sized and cube ice furnished by taxicabs through the cooperation of a local taxicab company had proved most successful. This service makes ice available for party use on a 24 hour basis. At least two district meetings will be held during the summer months, one in the southern and one in the northern section of the state.

## Ice Exhibit Planned for Home Economists

AN ICE exhibit will be in charge of Mary Pentland for the National Association of Ice Industries at the annual convention of the National Association of Home Economists to be held at the Statler Hotel, Boston, July 11-14. The following will be displayed: home refrigerators, iced vegetable cases, fish cases, picnic chests, beverage and storage chests.

# The Changing Ice Market

CHANGES in the ice market were discussed and some interesting conclusions were reached at the recent Conference on Management held in Austin, Tex., by the Southwestern Ice Manufacturers Association. Charts presented showed short-range variations that followed closely from year to year the weather conditions. The long-range changes to a surpising degree followed the business trends.

One chart showed curves of ice tonnage as compared with the curves of department store purchases in the Southwestern Federal Reserve District from 1922 through 1949. Both the ice tonnage curve and that of the department store purchases reflected the boom years of the late 20's, the years of depression and of recovery of the thirties, and the World War II boom period.

Purchasing power was without doubt the major factor in these long-range changes of this more than a quarter of a century of experience. While losses to mechanicals influenced ice tonnage, the outstanding fact is that the ice business like other businesses responds directly to the degree of purchasing power of the masses of the people through any one period.

### Classification of Trade

Reports from twenty companies representing various types of operations and markets indicated the following conclusions regarding changes in the domestic and the commercial ice business:

*First:* The most severe losses have been in the domestic trade.

*Second:* The commercial trade has shown smaller decreases and, in fact, in many operations and markets, increases have been shown, even during 1949.

*Third:* Procesed ice mostly for the commercial trade has shown steady increase, especially for the service of fish and poultry cases, vegeticers and commercial chests.

*Fourth:* The commercial reach-in refrigerator was again pointed to as a developer of year-round profitable ice business.

*Fifth:* The domestic business is still the source of around 50 percent of the gross revenue and should be fought for through marketing of domestic refrigerators, including the new deluxe types, and through placement in the hands of mechanical users of chests, especially the small table or picnic types.

Seasonal changes statistics presented at the conference show that the percentage of total annual ice business done in the fall and winter is increasing and that the percentage done in the spring and summer is consequently decreasing. A greater fluctuation was shown in the domestic business which is more highly seasonal than any other. The commercial, which is less seasonal, was shown to be steadily gaining in percentage of the total annual ice business.

### Pricing Policies

In a discussion of the above figures and of pricing policies in the ice industry, the vital point was brought out that net earnings rather than tonnage should be made the measure of progress in the ice industry. After all, it was pointed out, the motive in any business is to show net dollars rather than the gross volume of tonnage. The changing markets call for constant study of possible economies on the one hand, and of pricing policies on the other.

For example, the pricing of processed ice must come in for careful, and in some respects, revolutionary changes in policies. The cost of processing, bagging and delivering, either at the station or off the routes, must be considered and wherever this is done, the business is showing promise of increased revenue. Discretion has to be used of course. The commercial user of processed ice is price conscious; he knows that he gets a bargain in the bag of twenty-five pounds of ice for twenty-five cents, or even a nickel or dime more.

It is up to each operator to determine his cost and to follow sound cost accounting practices as his market changes and as the costs of doing business change. In other words, the call is for sound cost accounting practices in the ice industry just as it is in all other industries that will set themselves to meet changing conditions.

## More Ice Research

THE University of Massachusetts has been granted another $1,000 for research on iced vegetables, $750 from the National Association and $250 from the New England Association. This money will be used to continue and expand the work that has been done by Professor Grant Snyder.

## Canadian Association Holds Spring Conference

MILDRED CROFT, Secretary

APART from the annual convention, there has not been for many years such a large turnout of ice dealers as that which visited Toronto for the two-day combination directors' meeting and spring conference held April 18 and 19. By actual count there were 56 in on the meetings representing ice dealers from Brantford, Kitchener, Grimsby, Galt, Stratford, Ottawa, Sarnia, Dunnville, St. Catherines, Montreal, Oakville, St. Thomas, Toronto, Dresden, Niagara Falls and Trenton. A newcomer was J. R. Longstaffe, president of Renfrew Electric & Refrigerator Co., Ltd.

During the morning session of the first day, an actual driver-salesman meeting was put on, directed by Jack Webster and Bert Staples. Delegates at the conference were regarded, for this period of the session, as driver-salesmen at a training meeting, and took part accordingly. Demonstrations were used during the course of the meeting such as "Comments from a route inspector about the practical aspects of keeping a route book up-to-date."

During that portion of the meeting devoted to discussion of the merits of ice refrigeration, all the lights in the room were turned off, and a spot light was played on a new refrigerator on the platform, and its operation and efficiency was demonstrated. This was followed by a lively quiz period during which questions were asked by various delegates.

Another highlight of the conference was a presentation by H. A. Fischer "Planning and Building a Small Plant" in which were treated such problems as: Layout of plant and depot for easy access for ice and truck loading; how should labor costs compare to a larger plant; advantages of the 300 and 400 pound blocks; how far should we go in mechanizing a 20-ton plant; what preparation should be made for expansion. At the close of Mr. Fischer's address a peppy 'Questions & Answers' period developed, which brought out many important points in plant planning and operation.

The demand from ice dealers for a series of strong, small-space newspaper advertisements has been answered with a special mat service covering all departments of the ice business, block ice, ice cubes and crushed ice and ice refrigerators. Mats are available immediately and will be shipped the same day the order is received.

# Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

*Thomas O'Connor, New Orleans*
*2nd V. P. National Association Practical Refrigerating Engineers*

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Chicago Illinois


# Frost Heaving Damages Freezer Floors

## INTRODUCTION

CERTAIN types of ground when subjected to frost penetration undergo considerable expansion, due to the formation of ice lenses. This process is called "frost-heaving," and is well known as a common source of trouble with roads. It is perhaps not so widely known that the freezing of the ground beneath cold storage rooms may result in frost heaving of sufficient magnitude to cause severe damage to the cold store structure.

During recent years, a number of examples of such damage have been investigated by the Building Research Station of the Department of Scientific and Industrial Research. Most of these examples have related to older types of basement cold stores which prior to 1940 were used for short term storage at about 20°F. or higher, but which since that date have been used for long term storage at lower temperatures (about 14°F. or lower). It would appear that under these more severe temperature conditions, the insulation normally used is not sufficient to prevent the zero isothermal from penetrating several feet into the ground beneath the foundations. Then, given certain ground conditions, frost-heaving occurs and causes hogging of the floor and unequal lifting of the foundations, accompanied by distortion and cracking of the superstructure. These structural effects usually proceed slowly, but if not recognized and dealt with in an appropriate manner may finally involve difficult and expensive remedial measures which may necessitate closing the cold stores for many months.

*A recommended method to prevent frost heaving is to run terra cotta sewer tile of 6 to 8 in. diameter with a spacing of 6 to 8 feet. center to center. The ends of the tile are brought up and turned with an ell which is screened.—Photo from Armstrong Cork Co.*

The object of this paper is to bring to the notice of those concerned with maintenance and design of cold stores:

(1) The conditions under which frost-heaving of the ground may occur.

(2) Its initial effects on the structure and the serious damage which may ultimately result.

(3) Suggested methods of dealing with cases where frost-heave damage has occurred, or is beginning.

(4) Features desirable in the design of foundations for new cold stores to avoid frost-heaving.

## Conditions Governing Frost-Heaving

Frost-heaving occurs when the freezing of the soil results in the formation of layers of segregated ice. The conditions which govern this process may be divided into two groups: (a) the temperature conditions; (b) the site conditions. The temperature conditions are those which control the rate of penetration of the zero (0 deg. C) isothermal into the soil. In general a slow descent of the frost line favours ice segregation and the deeper it penetrates into the soil the greater is the frost-heave. The site conditions refer to the type of soil and the ground water conditions, both of which have an import- and influence on ice segregation. Usually it is soils of the fine-grained type such as fine sands, silts and clays which exhibit frost-heave.

The influence of these two groups of conditions as they affect frost-heave in relation to cold stores will be considered separately.

(a) *The Temperature Conditions*: In the present problem the penetration of the zero isothermal is controlled largely by the thermal environment created by the cold store and, to a smaller extent, by the boundary conditions determined by the natural temperatures in the surrounding air and soil. Once the zero isothermal has penetrated into the ground below the store its progress with time is then considerably influenced by the latent heat evolved when water changes to ice. The maximum penetration is finally reached when a balance is struck between the flow of "cold" out through the floor of the store and the flow of heat in from the surrounding soil.

The penetration of the zero isothermal is then a complex process involving both a time effect and a space distribution over the area of the stores. It is governed by such factors as the thickness and efficiency of the floor insulation; the temperature of the store and the period over which this temperature is maintained; the ground area covered by the cold store; and the position of the floor relative to the ground surface.

The ground area covered by the cold store influences both the maximum penetration of the zero isothermal and its distribution over the area. As regards the maximum penetration, the larger the area of the stores the deeper does the zero isothermal go. In the practical examples investigated, the largest store was about 240 ft. by 130 ft. and gave a maximum penetration of the frost line of about 5 ft. 6 in. into the soil below the floor, while the smallest was about 70 ft. square with the frost line going to 1 ft. 6 in. below the floor. The distribution of penetration of the zero isothermal is not uniform over the area of the building. In the vicinity of outside boundaries and near open corridors where normal atmospheric temperatures prevail, the zero isothermal does not descend so far as at points remote from these influences.

As regards temperature conditions, the main influence of the position of the floor relative to ground surface is in its effect on the boundary conditions. As is well known, the natural temperatures of the ground fluctuate seasonably over a much wider range near the surface than they do in the deeper layers, and at a depth of 10 ft. the range is roughly from 8 C. to 13 C. A basement store has then more nearly steady boundary conditions.

(b) *The Site Conditions*: Whether the penetration of the zero isothermal causes frost-heaving or not depends on site factors such as the type of soil and the ground water conditions. If the soil is of a fine-grained type, such as fine sand, silt, or sandy clay, and the ground water conditions are such as to allow a continuous supply of water (either ground water or capillary water) to the zone where freezing is taking place, the conditions favour ice segregation and frost heave. The effect of a slowly descending frost line is then to form numerous lenses of ice at various depths in the soil.

## Process of Segregation

The process of the segregation may be briefly described as follows: (2) As the cold front penetrates into the soil there is a tendency for the more water to super-cool before the ice separates out. The ice is usually formed in the larger interstices, and, if they are not large enough, it expands them. The ice crystals tend to grow in the direction of heat loss (i.e., vertically), and therefore heave the soil. When freezing occurs, equilibrium is probably established at a temperature of less than 0 deg. C., and the ice has a vapour pressure corresponding to this temperature. It can then grow at the expense of water under a considerable capillary suction. Thus, once formed, the ice has the property of drawing water up to itself, and an ice layer will continue to grow as long as the supply of water is maintained. The continued supply of water requires two conditions. First, that the soil in contact with the ice should have a sufficient number of pores of such size as to remain full under the suction developed by freezing. Second, that there should be a source of water, such as a layer of soil which can release a lot of water for only a small rise in suction, which can feed water up through the pores as fast as it is withdrawn by the growing ice. (Thus a gravel will not show marked frost heave because the pore channels are too large to remain full and supply water to an ice lens. A fat dense clay will not show marked frost-heave because the pores are so small that they offer considerable resistance to

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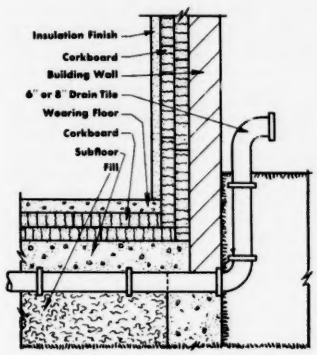
**Sometimes freezer room floors built on the ground heave and crack. The opinion that this is caused by thermal expansion of the ice frozen in the ground beneath has been widely expressed. After troubles of this nature had been encountered through the years the construction of freezers on the ground or in basements was discontinued for a time. Recently it has been resumed but with certain precautions which have been previously described (ICE AND REFRIGERATION Nov. 1948, Pg. 32 and March 1950, Pg. 49).**

**This article recounts information drawn from a most thorough investigation of frost heaving to describe why and how it occurs. (The analysis does not support the thermal expansion theory.) Soil conditions which tend to produce this difficulty are detailed and precautions are given to minimize the damage to the structure after frost heaving has been encountered.**

**The investigation was conducted and reported by L. F. Cooling and W. H. Ward of the Building Research Station, Department of Scientific and Industrial Research, Garston, Herts, England. It was published in the Proceedings of the (British) Institute of Refrigeration, 1944-1945.**

the passage of water up through them.)

When the supply of water ceases and the ice lens can no longer grow, the cold front penetrates further down into the soil until a point is reached when the conditions are again favorable to ice segregation. In this way a series of ice lenses are formed separated by layers of soil in which the only evidence of freezing is small isolated ice crystals.




*A sectional drawing showing the installation of sewer tile to ventilate under freezer floors and prevent frost heaving.—Sketch from Armstrong Cork Co.*

In the practical cases examined, in which frost-heave damage has occurred, the soils have been of the sandy clay type. As regards ground water conditions, it is significant that in each case the store was of the basement type and that the ground water level was at or not far below the floor of the cold store. The ice lenses found varied in thickness from less than 1/16th in. up to 1 in. thickness, and by taking continuous "undisturbed" samples it was possible to see how they were spaced. For instance, a set of samples passing through about 2 ft. of soil revealed layers of ice ¼ in., ⅛ in., ½ in., ¼ in., ⅜ in. in thickness separated by layers of clay.

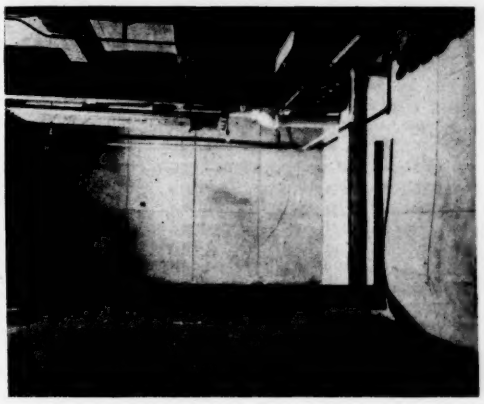
The process of ice segregation is accompanied by a heaving of the surface of the soil. Laboratory work on the freezing of soils by Taber (3) and Beskow (4) has shown that the total heave of the surface is equal to the total thickness of all the individual ice lenses and, furthermore, that the water content of the soil between the ice lenses is closely equal to the original water content. Measurements on cold stores have confirmed this in practice, the heave being roughly equal to the combined thickness of the ice lenses and the water content of the soil between the lenses equal to that of the natural unfrozen soil adjacent to the cold store. These results indicate that the ice lenses are formed by drawing additional water in from the surrounding unfrozen soil.

It is evident that frost-heaving in soils is not essentially due to the 10 percent volume expansion which occurs when water changes to ice, for in laboratory tests frost heaving of up to 60 percent has been obtained. Also the same heaving process has been produced in the laboratory with soils saturated with liquids which contract in volume on freezing. (3) Thus the heaving is primarily due to the additional water drawn into the freezing zone during the process of ice segregation. At one cold store where the water content of the unfrozen soil amounted to only 28 percent of the total volume the vertical frost heave amounted to about 10 percent of the depth of the frozen soil. If the heaving had been due only to the normal expansion of the water changing to ice, the vertical heave would not have been greater than 2.8 percent. (i.e., 1/10th of 28 percent) of the depth of frozen soil.

## Remedial Measures

(a) *Thawing Out*: When it is found that frost-heaving is taking place the obvious course to adopt is to raise the working temperature of the store and thaw out the soil. If frost heave has only just begun this procedure does not involve any difficulty, but if the trouble is long standing and the frost line has penetrated some depth into the soil this must be done with judgment or otherwise even more drastic damage to the structure may occur during thawing than took place due to frost heave. The natural tendency is to turn off the refrigerant to start thawing out the ground, but this course is dangerous, if the frost line has penetrated to some depth, since it results in the frozen soil thawing out from the surface downwards as well as from the bottom upwards. In this way a large quanity of water which may have taken years to accumulate is suddenly released and is trapped between the floor and the frozen soil below. With the types of soil which are subjected to frost heave an increase in water content causes a substantial decrease in bearing capacity, and in some cases the soil may attain the consistency of mud. Hence there may be danger of complete failure in shear of the soil beneath the foundations, or at least of an excessive settlement below the original position. Examples of such excessive movement have been recorded. (5)

Ideally, the soil should be thawed out sufficiently slowly to enable the additional water to diffuse back into the surrounding soil at the same rate as it is released. In any case, the cold store temperature should be kept below freezing point and should be raised only by an amount sufficient to ensure that thawing takes place from the base of the frozen soil upwards. For the typical cold store examined it is thought that by raising the working temperature to about 20 to 24 F., and letting the store run for a period at this temperature the soil would thaw out completely from below. In the practical case, however, it would probably be best to control the thawing process on the basis of information obtained by taking periodic levels to follow the settlement of the stanchions and floors. It would also be desirable to



***The destructive effects of floor heaving caused by freezing of the soil beneath are shown here. The floor is raised and broken and lower wall insulation is displaced. — Picture by Cork Institute.***

make periodic measurements of the temperature of the soil at various depths to follow the thawing process and to ensure that the soil has completely thawed out before commencing any repair works. Such a procedure may involve some reduction in the bearing capacity of the soil, but this is in general permissible, since most foundations of this type have an adequate factor of safety against excessive settlement.

### Foundation Features to Avoid Frost-Heaving

The general foundation features required to avoid the possibility of frost-heaving in new cold stores working continuously at 14 F. or lower may be briefly summarized as follows:

In the first place, the type of cold store which is constructed with the main floor above ground at platform level has obvious advantages from the point of view of frost heave. It provides for a space about 2 ft. 6 in. high between the floor and the ground surface and by leaving large openings in the platform walls a good natural circulation of air is assured. Then, provided the stanchions are well insulated in the cold store, there is little risk of frost penetration into the soil below normal footings and the problem of frost-heave is not likely to arise.

If the stores are constructed with the floor at or below ground the site conditions become very important. In such cases the site should be explored by borings or test pits to find the nature of the soil to a depth of about 10 ft. below the proposed floor level. Particular attention should be paid to the ground water level, and its probable variation over the year. Knowledge of this may be available from local sources, but if not, observations of the water levels in small boreholes should be made over a period of weeks and preferably in the winter when the ground water level is likely to be at its highest.

For stores built with the floor at ground level the standard insulation may suffice if the site conditions are favourable. For instance, if the foundation strata comprise well-drained gravels or coarse sand with the ground water level below the depth of possible frost penetration, then the risk of frost-heave is remote. If, at a site where the general level of ground water is low, the soil immediately below the floor is of an undesirable type, the removal of the doubtful soil and the substitution of a layer of well-drained gravel to a depth greater than the possible frost penetration (which may be up to 6 ft., depending on the size of the store) may be a convenient procedure. In more unfavourable circumstances the possibility of frost heave should be considered and precautions, such as making a ventilated air cavity beneath the floor, should be taken.

For basement stores, when the main floor may be some 10 ft. below ground level, the ground water level is much more likely to be near or above floor level. Even if the ground water at the site is low, special measures need to be taken to prevent surface water getting to the underside of the floor slab via the backfill around the basement walls. Such measures involve diverting surface water and providing a drain around the building at basement level. In general, with basement stores required to be run at 14 F. or lower, it would seem desirable to make special precautions to prevent frost-heave. These involve adopting one or other of the methods outlined in section III, namely, increasing the thickness of the cork insulation (possibly something like double the standard thickness may be required), or introducing a source of heat between the floor of the store and the soil in the form of a ventilated air cavity, hot water pipes, or an electrical heating system. Of these, the electrical method is probably preferable. Alternately, it is suggested that it may be best to restrict the use of basement stores to chill room working at fairly high temperatures (32 F. or just below) while employing the standard form of floor insulation.

### References

(1) Taber, Stephan. Freezing and thawing of soils as factors in the destruction of road pavements. PUBLIC ROADS, 1932, 11, 173-7.

(2) Schofield, R. K. The role of moisture in soil mechanics. CHEMISTY & INDUSTRY 1943, 62 (36), 339.

(3) Taber, Stephan. Frost heaving. JOURNAL OF GEOLOGY. 1929, 37, 428-61. The mechanics of frost heaving. JOURNAL OF GEOLOGY. 1930, 303-17.

(4) Beskow, Gunnar, Tjalbildningen och Tjallyftningen (with English summary). Sveriges Geologiska Undersonkning, Ser. C., No. 375, Statens Vaginstitut, Stockholm '35.

(5) Dockstader, E. A. Effect of freezing and thawing of soil under foundations of cold storage warehouse. PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON SOIL MECHANICS, Harvard, 1937, Vol. 3, 171-3.

(6) Steuermann, M. (Moscow) Warmegange der Kuhlhausgrundungen. Bautechrik, 1936 14 (38), 547-8.

(7) Cammerer, J. S. Warmeschutz mit electrischer Hilfsheizung. Schweizerische Bauzezitung, 1937, 109 (3), 34.

(8) Linder, S. F. Freezing of foundation soil of cold storage buildings. Warme und Kaltetechnik, 1942, 44 (2), 17-23 and (3) 34.8.

## Plan Your Vacation at NAPRE Convention

LOS ANGELES Chapter will be host to the 1950 NAPRE Convention. Headquarters for this 41st annual meeting will be in the Hollywood Roosevelt Hotel and the dates are November 28, 29, 30, December 1.

It will be noted that these dates are later than usual, but this fits in well with the situation on the coast where the weather is mild and even at that time the attendants will be able to enjoy pleasant fall weather. It is expected that more of the members from the fruit growing territory in the northwest will be able to attend this later convention. By that time the fruit will be in storage houses and cooled to holding temperature.

Recently Los Angeles Chapter announced the committee appointments as follows:

General Chairman, Regis Gubser.
Vice General Chairman, E. L. Nelson.

Arrangements, E. T. Quinn, Rudi Kettler.

Publicity, George Paulick, W. F. Losch.

Exhibits, D. H. Byl, Frank Elliot, H. N. Royden.

Entertainment, Frank Eccleston, L. H. Benedict, J. C. Schobert, Frank Muzzy.

Finance, W. F. Losch, Rudi Kettler.

Many of the members of these committees are well experienced in their tasks. They did similar work in connection with the 30th annual convention which was held in their city. In addition they have been active on other committees of this nature.

Chairman Regis Gubser in a recent announcement about the convention emphasized that those who attend will have a most interesting time and learn a great deal about refrigeration. The educational program and the numerous inspection trips will guarantee this. In addition attendants should expect to enjoy themselves, Mr. Gubser said, because Los Angeles and Hollywood are famous places of entertainment and they will furnish the full quota for the engineers at their convention.

# NAPRE Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

## Parallel Operation

**Question No. 850: In our plant there are two ice freezing tanks. It was originally designed to produce thirty tons of clear ice every twenty-four hours, using a tank holding 432 cans, freezing 300 lb. bars. Two 8 in. x 8 in. compressors were installed. The evaporator is controlled by a high side float making this a flooded system. Recently a smaller tank was installed with an additional 8 in. x 8 in. compressor. This tank is about half the size of the original. It holds 272 cans, same size as larger tank. The system is entirely cross-connected.**

**I have at times been unable to keep brine temperatures in each tank anywhere near equal. The consensus of opinion locally, is the tank having the lowest temperature will rob the tank having the higher temperature. In other words, the ammonia will flow to the coil of the tank with the lower temperature. I don't agree with this and would appreciate your opinion on it. What is the best way to operate these two tanks?—C.R.S.**

ANSWER: I believe that the only way you will be able to keep the brine temperatures near equal in the two tanks is by regulating the amount of ice pulled from each tank. When the brine temperature in one tank goes up too much you should cut down on the amount of ice pulled from that tank.

If the coils in the two tanks are on the same level and the pressure within them is actually equalized, the liquid levels and the ammonia boiling temperatures will be the same. Under these conditions one tank cannot rob the other regardless of the brine temperature. On the other hand if the vapor pressure in one set of coils is lower than in the other, due to a difference in coil levels, or to a difference in frictional resistance in the two systems, the liquid will naturally gravitate to the coil having the lower vapor pressure and thus rob the other. The robbing is due to a pressure difference and not to a temperature difference of the brine. This answers your question about the cause of the robbery.

As to the best way to operate the two tanks, let me suggest that you change from high side float control to individual tank control. High side float control is tempermental even with a single evaporator. As you know it requires exactly the right amount of ammonia in the system. If the system is not fully charged the evaporator suffers the deficit; if it is over charged the compressor is abused by the surplus. An evaporator requires less ammonia when operating at a light load than when operating at full load. Usually this difference is stored in the liquid receiver. A high side float prevents this variation in liquid level in the receiver and thus deprives the receiver of one of its beneficial functions. Of course this surplus liquid may be held within the evaporator at the lighter loads by "back-pressuring" the vapor. This may be done automatically with a back pressure valve in the suction line, or by hand regulation of an ordinary globe valve in the suction line.

For maximum ice production keep the system fully charged, and if you want to maintain a uniform brine temperature in both tanks regulate the amount of ice pulled in each tank in proportion to the capacity of each evaporator.—H. G. Venemann.

## Columns and Floor Insulation

**Question No. 851: A building we are constructing has the usual method of floor construction which consists of a 4 in. concrete sub-floor with corkboard insulation laid on it. Then a concrete finish floor 4 in. thick will be laid on the cork. A row of 4 in. pipe columns down the center will support the ceiling.**

**The room is designed for -15 F freezer service and the cork in the floor is 8 in. thick. What is the best practice in setting these columns, should they be set on the sub-floor and extend up through the insulation and finish floor? Or should the columns rest on top of the finish floor? —T.J.M.**

ANSWER: It would be customary to have columns pierce the floor insulation and go down to footings of sufficient spread and bearing area in a multiple floor building where these columns had to support heavy weight above. Where light construction is used and the columns do not carry heavy weight, it is better to attach a steel plate as a foot for the column and place it on top of the finished floor so that it does not pierce the insulation. This has several advantages:

a. It simplifies construction

b. It permits a continuus envelope of insulation all the way across the floor.

c. It eliminates the need for insulation extending up around the column, which would be necessary if the column went through the floor insulation.

Since 4 in. pipe columns are being used it is quite apparent that the load to be carried is relatively small and there need be no apprehension about placing this load above the insulation on top of the finished floor if you use a steel plate foot on the column just as it would be used in good construction anywhere.—Emerson Brandt.

## Rain and Evaporative Condensers

**Question No. 852: Evaporative condensers are frequently located on the roof or some other place outside. Does rain have any effect on the capacity of these evaporative condensers.—H.W.M.**

ANSWER: The capacity of an evaporative condenser depends upon the wet bulb temperature of the air and is effected only to a negligible degree by the dry bulb temperature. During a rain storm, the humidity is high or in other words the dry bulb temperature is low for a given wet bulb temperature. Thus, if we compare capacity on the basis of a constant wet bulb temperature, it can be said that rain has no appreciable effect on the evaporative condenser capacity.

Rain often brings a considerably cooling of the air which results in lowering of both the wet and dry bulb temperatures. The capacity of the evaporative condenser will then increase as a result of the lowered wet bulb temperature which of course is the result of the rain fall and it could then be said that rain increased the capacity of the Tower, however, a more accurate statement would be to say that the rain brought a lowering of the wet bulb temperature which resulted in increased condenser capacity.—D. D. Wile.

N.A.P.R.E. Department

## Leak Detector—No Flame

EXCELLENT comments and suggestions on Question No. 845 have been furnished by W. R. McGinnis, Houston, Texas.

"Your answer to E.G.I. in the N.A.P.R.E. question box in May I & R, page 43, caught my eye.

"Instead of acid to produce fumes for locating leaks, suggest using a small cylinder of $SO_2$ such as are used by many refrigerator service men. These are available almost anywhere.

"Attach a few feet of small hose to the outlet for convenience, set cylinder upright and crack valve slightly, directing jet of $SO_2$ gas to point where leak occurs and even a minute leak will show white fumes.

"With acid on waste the fume smoke is all over the place and is not very distinct, while with $SO_2$ a small $NH_3$ leak looks like a jet of smoke issuing from the point of leakage. I have used this around refineries and chemical plants for many years and find it much better than any other method."

## NEW QUESTIONS

### Answers in August Issue

### Condenser Liquid Sub-cooling

**Question No. 853: In evaporative type Freon-12 condensers the liquid is sometimes drawn off through a sub-cooling coil placed in the water collecting pan. Just how much benefit does this sub-cooling bring to the operation?—J.F.**

### Liquid Line Vibration

**Question No. 854: The liquid line of our Freon-12 system vibrates when the discharge pressure is high. The load is fairly constant and the line appears well braced. It has only a strainer and solenoid valve between the receiver and 6 thermo expansion valves. What causes vibration in liquid lines like this? What is the best procedure to eliminate the vibration?—S.R.L.**

### Float Collapses

**Question No. 855: The ball-float in a liquid level control on our large evaporator collapsed in service after only a few months operation. We discussed the matter in our meeting and no one could explain why the float collapsed inward instead of bursting outward. One member related another incident where a ball-float had completely collapsed under operating pressure in the system. What usually accounts for such failures and how can they be prevented?—R.V.C.**

# News Notes and Activities of Chapters

## Chicago

By E. B. Jones

THE recently elected officers took over at the second May meeting of Chicago Chapter. President Leslie Clifford received the gavel from Eugene Rytlewski, retiring president. He thanked Mr. Rytlewski for his effective work in the past and said he was counting on him for the future.

In outlining plans developed since the last meeting Mr. Clifford emphasized that he sought cooperation not only from the officers but also from the membership as a whole to broaden the activities and to put on a program of real educational merit.

First Vice-president Ed Gaarnas was then introduced and said he would be happy to work fully on the program because he has always been impressed with the benefits which engineers can obtain to assist them in their day to day problems, by attending and taking part in the programs. Practically everything that comes up he said is of value to the active engineer whether its application is immediately apparent or not.

Second Vice-president Douglas Benton also stressed the value of the engineering gains obtained at meetings and added appreciation for the value of personal contacts developed through work in the association.

The committee appointments were then announced by President Clifford. Chairmen of the Committees are: Educational, Eugene Rytlewski; Membership, Douglas Benton; Publicity, Frank Bartilotta.

There was a general discussion of program plans in which a number participated. The objectives as annonuced by Mr. Clifford are to develop an engineering mind which inquires into basic operations and reasons why results are obtained. Finally he said that the well trained engineer must know how to check a refrigeration plant and do what work is required to produce the best results from it at the lowest cost.

Two excellent color movies were shown through the courtesy of Northwest Airlines, Inc. These were "Hawaiian Journey" and "North to the Orient."

An excellent buffet supper was served to those in attendance in advance of the meeting.

**Fred McKenna at Kennard**

Fred McKenna, formerly of San Jose, Calif., is now chief engineer of Kennard Corporation, St. Louis. A graduate of Santa Clara (California) University, Mr. McKenna has earlier been a resident of the middle west. At that time he was chief engineer for a national manufacturer of refrigerating machinery and equipment.

## Los Angeles

By Fred Herr

Los Angeles Chapter concluded the business and technical phases of the first half of its 1950 meeting schedule with a panel discussion on transport refrigeration in the Terminal Club the evening of June 7.

In selecting the experts who discussed various phases of refrigeration as applied to the transportation of perishables, Regis Gubser, chairman of the educational committee, was fortunate in obtaining the collaboration of three men possessed of a well-rounded knowledge of the subject. These were Ted Schroeder of Pacific Kold-Hold Sales, E. M. Berger of Liquid Carbonic Corp., and A. E. Flowers of Union Ice Co. Following some interesting general comment by panel director Gubser, the three speakers were individually introduced for a 20 minute presentation of the phase of the subject assigned to them.

Mr. Schroeder outlined the history and development of the holdover plate type of refrigeration of trucks. Mr. Berger discussed dry ice development and its application to transport loads. Mr. Flowers, with a 200 pound water ice truck cooling unit set up in the meeting room as a demonstration unit, gave a talk on ice cooling, going into quite some detail of the various practices used today for transport cooling of meat, dairy products and flowers.

On the whole, the trilogy of presentations disclosed that no one system can satisfy all conditions and that there are fields for all types. The evening, however, again emphasized that this type of panel discussion, with several experts selected to form a discussion board, followed by a question and answer period, is still the most popular type of educational program for Los Angeles chapter meetings.

Edward Taylor of San Francisco president of San Francisco Chapter, NAPRE, a guest, commented on this when he complimented Los Angeles Chapter on the excellence of the educational program and wished them a successful convention this fall.

The business session was called to order at 8:00 p.m. by President Dale Rycraft. During the introduction of guests, Alexander M. Shears, instructor of refrigeration at the Los Angeles Trade Technical Junior College, presented 13 refrigeration students of that institution.

Emmet T. Quinn reported on the

progress of plans for establishing a Jesse C. Blair memorial research library at the college. G. R. Gilman and C. E. Fettes were initiated into membership. W. R. Burnett, chairman of the membership committee, reported that, as of June 7, the current membership drive had produced 45 new chapter members. Of these 35 were obtained by the "Independents" team and 10 by the "Ice Companies" team.

Chairman Burnett re-emphasized the committee's determination to attempt to bring chapter membership to the 500 mark by the time the national convention meets in Los Angeles this fall. He pictured this as no unsurmountable task by pointing out that it merely requires that one new member be brought in by each of the chapter's present members. "That's all," Burnett said. "One new member apiece. And you've all summer to do it in."

Upon motion of Rudy Kettler, it was voted to change the Old Timers Night meeting date from June 21 to June 28, so as not to conflict with the national Shrine convention. As on previous such occasions, the closing meeting of the spring session was to be dedicated to reunion with old members and reminiscences of the past. Invitations were sent out to all charter members and those who were members of the chapter prior to 1930.

## Fresno

By M. Pedersen

At its May meeting Fresno had the pleasure of a visit by Victor A. Stubblefield of Los Angeles Chapter. He described the numerous activities carried on by the chapter, including its methods of membership building.

Mr. Stubblefield described some of the plans already formulated for the national convention at Los Angeles. Because of the convention location this year he invited Fresno Chapter to send a large delegation and promised that they would find attendance at the meeting very much worthwhile.

The members participated in a general discussion of compressor lubrication which brought out a number of ideas with suggestions on how to avoid trouble with lubrication.

## Tacoma

By Elmer Johnson

At the regular June meeting Mr. Frost of the York Corp. showed some pictures of York's new developments of the V-W type ammonia compressors. F. Tompkin, a representative of D. W. Haering & Co. Inc. of Chicago gave a talk on brine treatment and advocated the use of chrom glucosates as a treatment, claiming that its use is considered more economical than other types of treatment.

There will be no more chapter meetings until next September and at that time E. Olsen, refrigerating engineer for the Tacoma Boat Building Co., plans to arrange an inspection trip of a new tuna clipper now being built by the boat company. This ship will be 120 ft. long and of the most modern design.

## New Orleans

By Leo J. Vivien

I. A. Lindberg, engineer for the American Blower Corp. discussed the subject of Fans and Their Application from a Practical Viewpoint at the regular meeting of May 6. Mr. Lindberg developed a very interesting discussion on this subject and illustrated his address with slides and graphs.

A plant visit to Bishop Edell's machine shop, one of the most modern shops in the city, was the program for the meeting held May 19. The members of the chapter enjoyed an excellent demonstration of the workings in this plant. At the conclusion of the visit, refreshments of all descriptions were served to members by the company.

These two meetings were fairly well attended and enjoyed very much by all the members present.

As a means of creating interest in the membership drive, the chapter plans to institute a course in refrigeration and air conditioning beginning the first of August and carrying over through the year. In the interim, before presentation of the course, work will be carried on locating likely prospects within the various industries in the city.

## Stockton-Modesto

By R. M. Edger

Our last meeting was held Monday, May 22. We visited the El Dorado Brewing Co., here in Stockton. We had a large turnout and all learned a lot from the trip through this plant. I noticed how clean everything was in particular. The engine room has quite a lot of older machinery in it but they keep it so shined up it looks better than some of the newer machines in other plants. Everything was spic and span and absolutely spotless.

I'm sure all the members received a lot of good from this trip and it should encourage them to keep their plants a lot cleaner.

## San Francisco

By F. H. McLaughlin

The annual High Jinks which has long been established as a high point in entertainment among the engineers of San Francisco was held May 10. There were 210 members and their guests in attendance. A scintillating program was presented that drew some of the choicest talent available in the area. Between this presentation and the limitless refreshments, the entertainment committee deserves hearty congratulations.

At the meeting of May 24 the main event was a talk accompanied by slides presented by W. J. Ludwig of York Corporation. The subject dealt with York's line of high speed, high tonnage, compact refrigerant compressors. Facts regarding economy of operation, small space requirements and ease of servicing were stressed. The slides very thoroughly detailed the methods of manufacture, design and testing of the units. The program was most informative and was appreciated by all present.

# NAPRE Department

## Yakima

By Elmer Toop

We recently welcomed to membership Lyman Bunting, president, Artificial Ice Co., and Leonard Calhoun, engineer for Cardwell-Magnusson Co., Wapato, Wash. The chapter is interested in extending its membership and we expect to have a number of additional names to report soon.

Our meeting was featured by two films produced by Minneapolis-Honeywell Regulator Co. On June 7 we made a tour through the new Memorial Hospital. The members were accompanied by their wives. One of our members, Harry Dodsworth is chief engineer of the hospital. Also there with him is Clarence Kuehner as engineer.

## Rio Grande Valley Chapter

By Armin Doneis

Roy Daniels of the Central Power & Light Co. was the speaker of the evening at the regular meeting of May 22. He brought an informal but very profitable discussion on electrical equipment maintenance. He described some useful tricks of the trade in use of a tong-test ammeter, dealt at length with symptoms and probable causes of unbalanced load on motor lines, emphasized need for care and juggling in selection of sizes for thermal relay heater coils, and discussed operation of synchronous motors and the maintenance of their exciters and the commutators of the latter. A sound-film entitled "Highlights of Steel Making—Part 1" was also shown and appreciated.

A letter from Chauncey Stuntz, who retained his membership in the Rio Grande Valley Chapter after moving to Charleston, S. C., outlines some operating problems dealing with electrical demand charge, volumetric efficiency, ice-pulling schedule, and brine temperatures involved in most economical operation of his ice-plant.

From the available information about his operating conditions, the consensus was that if circumstances permit it, he should establish an average daily pull that will supply the week's probable sales, with sufficient surplus stock of ice in the vault to take care of fluctuating demand and peaks. This would allow operating at a steady brine temperature with the minimum number of machines and lowest demand-charge for the month by keeping head-pressures within reasonable limits.

## Memphis

By Charles Conley

At the regular May meeting held Wednesday evening May 17, President Harry A. Simpson held a general round table discussion on air conditioning equipment and plants which brought out many points of interest. It was voted that the educational meetings be recessed for the months of June, July and August

as the educational program for the term 1949-50 was completed at this meeting.

A business meeting and general discussion was held at the June meeting Wednesday evening, June 7. The 1950-51 educational program was discussed at length but no action was taken. Doug Smith said a recent hail storm had skinned the watermelons up pretty badly but he was reasonably sure that the melons would at least come through as good as they have in other years.

A considerable number of new installations and additional installations are being made of air conditioning plants in the city and surrounding the city.

A. J. Clay reports that the new city ordinance governing the installation and operation of refrigerating plants is in full force.

## Industries Show Improved Safety Record

AMERICAN workers were a lot safer in 1949, the National Safety Council reports. Industrial injury rates for last year, released by the Council in advance of the 1950 edition of its annual statistical yearbook, "Accident Facts," show a substantial reduction in both the frequency and severity of 1949 accidents as compared with 1948. Thirty-eight of the 40 basic industry classifications reduced their frequency rates, and 28 reduced their severity rates.

The accident frequency rate for employees in all industries submitting company reports to the Council, based on the number of disabling injuries per 1,000,000 man-hours, was 10.14 in 1949, a reduction of 12 per cent from the year before.

The communications industry again led all other industries by turning in the lowest employee frequency rate. Its rate was 2.14, an 18 per cent reduction from 1948. Aircraft manufacturing again ranked second with 4.25, followed by the electrical equipment industry with 4.83 and steel with 4.96.

Storage and warehousing had a frequency rate of 10.14, down 18 percent from 1948 and a severity rate of .64, up 16 percent from 1948. Meat packing had a frequency rate of 12.74 down 29 percent from 1948 and a severity rate of 1.20, up 90 percent from 1948, The food industries had a frequency rate of 16.05, down 11 percent from 1948 and a severity rate of 90, down 17 percent from 1948.

The accident and severity rate for all industries reporting to the Council, based on the number of days lost per 1,000 man-hours, was 102 last year, a reduction of 9 percent from 1948.

# No Summer Lull in Membership Contest

THE pyramid and the chapter trophies probably are the reasons why some stiff competition is taking shape in the membership contest. For some time several of the intense competitors in former years have appeared to be resting on their laurels. Now the laurels may be wearing thin or getting bumpy. At any rate rumblings are heard that promise changes.

New Orleans Chapter is not going to take any siesta this summer. Early in June they held a special meeting of their officers to organize their membership drive. It was decided that the main issue involved in this type of drive is the educational features which can be offered prospective members. With this in mind, they are going ahead to institute a course in refrigeration and air conditioning starting at the beginning of August and carrying over through the year. In the interim before the presentation of this course they will make a canvass for all likely prospects. Special effort will also be made to secure the reinstatement of former members.

The above information is all they are willing to give out at the present time. Apparently they have not gone farther to publicize their exact methods for the competition. Perhaps it is sufficient to state that through the years their methods have been quite effective. In the last seven years they have taken three first places and have been in second position four times. Now they declare that anyone who beats them will have to produce superior results.

Members who participate in this drive realize that they are working not alone for a chapter trophy. In addition, valuable individual prizes will be awarded from the pyramid as contributed by many chapters throughout the country.

The contest is not alone among the large chapters. The other chapters also have a special trophy which will be awarded at the convention. Their individual members who produce good results are also in the race for their share of pyramid prizes.

Last month, V. A. Stubblefield of Los Angeles took a special local prize for bringing in 10 new members. He has been reported as a visitor at Fresno. While he was there he discussed membership methods and possibly enthused several of their members to copy his formula for producing multiple results.

Other chapters in the moderate size range are also carrying on good campaigns and they expect to be counted among the leaders when the prizes are awarded at the national convention in Los Angeles November 28.

# *More on Rupture of Brine Cooler*

TO THE EDITOR:

We have noted, with interest and some concern, the article appearing on page 18 of the April 1950 issue of ICE AND REFRIGERATION entitled "Ammonia Tank Explodes While being Defrosted."

While the article stated that the cause of rupture was overpressure, the reader could easily gain the impression that this overpressure was the vapor pressure of the ammonia at 60 F. The cause of the rupture undoubtedly was over-pressure, but apparently due to other reasons. The vapor pressure of ammonia at 60 F. is only 92.9 psig. If the tank had been properly designed and fabricated in accord with the specifications of the ASME Unfired Pressure Vessel Code, and for a working pressure of 250 psig, it could not have ruptured due to the 92.9 pounds of pressure. It would appear that the tank was probably full of liquid ammonia and that the rupture was caused by hydrostatic pressure. If this were not the case then the tank certainly was poorly fabricated and improperly tested.

The article did not give any details about the manner in which the tank was connected in the system, but it is assumed that it was probably between the cooling coils and the suction of the compressor. Both the suction valve and the expansion valve were closed, thus providing a system of cooling coils, tank and connecting piping without a relief valve.

This accident illustrates the importance of having adequate relief valves on any part of a system that can be isolated by closing the valves.

In the defrosting operation it would have probably been better practice to have left the suction valve open with the compressor in operation to pump away the ammonia vapors and keep the pressure down.

Yours very truly,
F. R. FETHERSTON
Secretary-Treasurer
Compressed Gas Ass'n Inc.

# Refrigerated Warehousing Industry

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

*Executive Offices*
TOWER BUILDING, WASHINGTON 5, D.C.

*Executive Vice-president*
WM. DALTON, WASHINGTON, D.C.

*Secretary*
JOS. H. COLQUITT, WASHINGTON, D.C.

*President*
J. L. GAGINI, OMAHA, NEB.

*Vice-president*
J. P. JOHNSON, WASHINGTON, D.C.

*Treasurer*
WM. A. MOORE, NEW ORLEANS, LA.

## THIS MONTH IN BRIEF

**Refrigerated Warehousemen Protest vigorously against gigantic government lending agency embodied in proposed bill to provide federal funds for acquiring marketing facilities for perishable foods.**

**Pacific States Cold Storage Warehousemen meet in annual convention and discuss cost finding and other industry problems.**

**Cold storage holdings on June 1 showed a trend toward ending the seasonal decline, with slight increase in cooler space, but a small decrease in freezer space.**

**Southwestern Chapter of the National Association of Refrigerated Warehouses holds meeting at Houston, Tex. Resolutions pledge further cooperation with Department of Agriculture.**

**New food freezing plant opens at Lafayette, Ind., with capacity for holding ten million pounds of merchandise.**

# Protest New Government Lending Scheme

***New Marketing Facilities Act to Provide Federal Funds for Acquiring and Operating Marketing Facilities for Perishable Foods Denounced as Wholly Unnecessary.***

ANOTHER gigantic government lending agency which would enable the Department of Agriculture to "improve" marketing facilities and "lower the distribution costs" of perishable foods is proposed in new legislation embodied in HR 8320. Briefly this bill proposes to authorize the appropriation of 75 million dollars to carry out its purpose of aiding individuals and concerns to acquire and operate market facilities. In addition, the bill provides that additional funds may be appropriated for administering the Act.

Eligibility for benefits of the Act are to be decided by the Secretary of Agriculture chiefly as to whether the facility is needed and whether, in his opinion, it will reduce the cost of distribution of perishable agricultural commodities, and whether the project is financially sound.

One of the objectionable features of the bill, as pointed out by industry spokesmen, provides that loans may be made to a borrower who is unable to obtain an adequate loan for such purpose from a source other than the federal government, thus in effect making it possible to approve a project on which banks and other commercial financial institutions have refused loans which, in itself, would indicate a major credit risk.

### Conditions Grossly Exaggerated

The "Declaration of Policy" in the bill contains statements which, according to industry leaders, grossly misrepresent the general situation and presents a picture that does not exist. At a hearing before the House Agricultural Committee in June, representatives of the warehousing industry called attention to these misrepresentations, and presented their factual case in opposition to this legislation.

Reviewing the chronology of events leading to the introduction of the bill, previous bills having similar purposes were analyzed. To some of these the industry had no objection; others were vigorously opposed because:

(1) Of the interference of the government in free competitive enterprise and the provision for operation solely on a non-profit basis, which is contrary to American principles, and entirely socialistic in trend.

(2) Of permitting the construction of public refrigerated warehouses if, when and where, the Department of Agriculture may deem it necessary in connection with one of their market projects.

(3) Of placing in the hands of a cabinet member or Federal Department too much power and decision over the lives, fortunes and welfare of the American people and industry. What we need is less regulations, not more of it.

(4) The Federal Government should divorce itself from the business of loaning money and guaranteeing loans; or confine emergency loaning to existing agencies created for that purpose; and not delegate such functions to cabinet members and Departmental officials.

"While the bill under consideration contains different terms and phraseology from previous bills, the same intent and purpose is noticeably present." Turning specifically to certain sentences and phrases of the bill, comment is made as follows:

*(Continued on page 51)*

## Summary of H.R. 8320

A BILL: To encourage the improvement and development of marketing facilities for handling perishable agricultural commodities.

Be is enacted by the Senate and House of Representatives of the United States of America in Congress asembled, That this Act may be cited as the "Marketing Facilities Improvement Act."

*Declaration of Policy Sec. 2.* It is found and declared that the marketing of perishable agricultural commodities affects the public welfare and is a matter of grave national concern; that vast quantities of fruits, vgetables, and other perishable agricultural commodities shipped from various producing areas located throughout the United States and foreign countries pass through and are handled in public marketing facilities located in large consuming areas which are in most instances inadequate and obsolete; that the handling of perishable agricultural commodities in such facilities is attendant with many uneconomic practices, greatly increasing costs and causing undue losses, excessive waste, spoilage, and deterioration, which result in producers receiving prices far below the reasonable value of their products, in unduly and arbitrarily enhancing costs of operations in such markets, and increasing the price of food to consumers; that the prices of all perishable farm commodities are directly affected by the prices made in these public markets and are adversely affected by the unduly burdensome costs resulting from obsolescent and inadequate facilities; that obsolete and antiquated facilities create such an undue restraint and unjust burden on interstate commerce as to make it imperative that appropriate measures be taken to free such commerce from such burdens and restraints and to protect producers and consumers against oppressive costs resulting from the use of such facilities; that modern facilities would make possible the saving of millions of dollars annually by removing the cause of many of the unnecesary costs and burdens; that in spite of the great need for improved facilities, efforts in the past have failed to bring about a satisfactory solution to the problem; that this failure has been due largely to the inability of farmers, dealers, brokers, commission merchants, and others, individually or collectiveley, to obtain through regular financial channels the relatively large amounts of capital necessary for the construction of modern facilities.

In consequence of the conditions referred to above, it is hereby declared to be the policy of Congress through the powers herein conferred upon the Secretary of Agriculture, to aid in the establishing of such public marketing facilities for the wholesale handling of fresh fruits and vegetables, poultry, eggs, sea foods, dairy products, and other perishable agricultural commodities as will be conducive to orderly and efficient distribution, increased consumption, and a reduction in the spread between prices paid by consumers and those received by farmers.

*General Purpose Sec. 3.* It is the purpose of this Act to facilitate, encourage, and assist municipalities and political subdivisions of States, public agencies, and instrumentalities of one or more States or municipalities, public corporations and boards, and private enterprise in the creation and development of modern and efficient public wholesale markets for the handling of perishable agricultural commodities in areas where such markets are found to be needed and where Federal assistance is requested and authorized as prescribed in this Act, to the end that unnecessary costs and burdens attendant with the marketing of perishable agricultural commodities caused by inadequate or obsolete facilities may be eliminated and that the spread between the amount received by producers and the amount paid by consumers may be reduced.

*Revolving Funds Sec. 6. (a)* There is hereby created a fund to be known as "the marketing facility mortgage insurance fund" (referred to in this Act as the "insurance fund"), which shall be used by the Secretary to make insurance payments under section 9 of this Act and to meet the expenses incurred in connection with the acquisition, operation, and disposal of market facilities acquired pursuant to the provisions of the insurance contracts in the event of default by the borrower . . . There is authorized to be appropriated to the Secretary the sum of $25,000,000 to constitute such fund which sum shall remain available until expended.

(b) There is created a loan fund to be known as the "marketing facility loan fund" (referred to in this Act as the "loan fund"), which shall be used as a revolving fund to make loans or to purchase or contract to purchase obligations under sections 10 and 11 of this Act and to meet expenses incidental to the protection of the interests of the United States in market facilities on which loans have been made and are in default, including the acquisition, operation, and disposal of such market facilities . . . The aggregate amount of loans and of purchases or contracts to purchase obligations . . . shall not exceed $50,000,000. There is authorized to be appropriated the sum of $50,000,000, to constitute such fund, which sum shall remain available until expended.

*Insurance of Mortgages Sec. 8. (a)* The Secretary is authorized, upon application of a prospective mortgagor or mortgagee under a first mortgage eligible for insurance under this Act on a market facility, to insure such mortgage and to make commitments for the insurance of any mortgage prior to the date of its execution.

(c) In order for a mortgage on a market facility to be eligible under this Act—

(1) the person obligated to pay thereunder shall be an eligible borrower;

(2) the market facility mortgage shall be one which is determined by the Secretary to be eligible for mortgage insurance;

(3) the mortgage shall be made to and be held by a mortgagee approved by the Secretary as responsible and able to service the mortgage properly;

(4) the principal obligation . . . shall be in such amounts not in excess of the amounts specified . . . as may be necessary to enable the borrower to establish the market facility;

(5) the mortgage shall have a maturity satisfactory to the Secretary but not to exceed forty years from the date the mortgage is insured;

(6) the mortgage shall bear interest at not to exceed 4 per centum per annum on the amount of the principal obligation outstanding at any one time;

*Direct Loans Secured by Mortgages: Sec. 10.* (a) The Secretary may make a loan from the loan fund to any eligible borrower for the construction of a market facility, if he finds that the borrower is unable to obtain an adequate loan for such purpose from a source other than the Federal Government upon terms and conditions generally comparable to the terms and conditions applicable to loans insured under section 8.

*Financial Assistance to Municipalities or Political Subdivisions: Sec. 11. (a)* To aid in the establishment of market facilities, the Secretary may make a loan to, or contract to purchase or purchase the securities and obligations of any municipality or political subdivision of a State, which does not have authority to execute a mortgage to secure a loan under sections 8 and 10, but is otherwise eligible for such a loan.

*Eligibility Requirements: Sec. 12.* To be eligible for the benefits of this Act, a borrower must show to the satisfaction of the Secretary that the facility is needed and that the location, design, method of financing, method of operation, and such other requirements as the Secretary may determine necessary to effectuate the purposes of this Act will be met including the following:

(a) That the proposed market facility will reduce the cost of distribution of perishable agricultural commodities and handle a sufficient volume of business to enable the loan to be amortized within the period specified at the time the loan is made.

(b) That the proposed market will be so located and designed as to make possible the direct loading and unloading of rail and truck receipts into or from the buildings of handlers receiving substantial quantities of perishable agricultural commodities by such methods of transportation, and that no restrictions will be imposed which will prevent access to the facility of supplies handled by any rail or truck transportation company.

(c) That sufficient land is included as a part of the facility to meet the needs of the initial construction, plus a reasonable amount of land for expansion of the market facility, and in no case shall the land available for future expansion be less than one-fourth of the acreage utilized in the initial construction.

(d) That not more than one-third of the total cost of the proposed mar-

ket facility, including the land set aside for future expansion, is to be expended for the acquisition of land, graded and placed in condition for construction.

(e) That the proposed market facility will not be operated in a manner which would discriminate against any perishable agricultural commodity on account of geographical origin of such commodity or prevent any producer, seller, or buyer from utilizing the market facility because of his organization, business methods (if not unfair or unlawful), membership or nonmembership in any organization, or on account of the method of transportation of the products.

*Administrative Expenses: Sec. 18.* There is authorized to be appropriated such sums as Congress may from time to time determine to be necessary to enable the Secretary to carry out the provisions of this Act, except that any expenses in connection with marketing facility research, development of plans for market facilities, determination of the need for market facilities, and methods of operation of market facilities shall be financed from funds made available pursuant to the Agricultural Marketing Act of 1946 and the "marketing farm products" item in the Department of Agriculture Appropriation Act.

## What the Government "Guesstimates"

1—The marketing of perishable agricultural commodities is in most instances inadequate and obsolete, effecting the public welfare and is a matter of grave national concern.

2—The handling of perishable agricultural commodities is attendant upon many uneconomic practices, greatly increasing costs and causing undue losses, excessive waste, spoilage and deterioration.

3—Obsolete and inadequate facilities create such an undue restraint on interstate commerce as to make it imperative that proper measures be taken to free such commerce from such burdens and restraints and protect processors and consumers against oppressive costs resulting from the use of such facilities.

4—Failure to provide modern facilities has been due largely to the inability of farmers, dealers, brokers, commission merchants, and others to obtain through regular financial channels the amounts of capital necessary for the construction of modern facilities.

5—Modern facilities would make possible the saving of millions of dollars annually by removing the cause of many unnecessary costs and burdens which efforts in the past have failed to bring about a satisfactory solution.

## Factual Information Provided by Industry

1—There is no evidence that the public welfare is being affected adversely by the existing private enterprise system of marketing perishable agricultural commodities.

2—Facts submitted by the Department of Agriculture does not support the statement that there are uneconomic practices, increased costs, losses, waste, spoilage and deterioration in the present handling of perishables.

3—When there has been need of industrial improvement in this country American financial institutions have always stood ready to provide the finances. They are noted for their shrewdness and sagacity and for their ability to truly and efficiently analyze the situation and the possibility of success.

4—If there has been a failure to "obtain through regular financial channels" the money required for these so-called modern markets, it has been because the propositions submitted have been unsound, and there existed no reason for change. This in itself would indicate a major credit risk.

5—Whatever obsolescence may be present in the marketing of perishables in this country can and will be rectified by private interests and through the forces of competition. No one can foretell what the needs will be ten years hence.

# Government Loans

*(Continued from page 49)*

"Regarding the statement in the Declaration of Policy that the marketing of perishable agricultural commodities affects the public welfare and is a matter of grave national concern, "there is no evidence that the public welfare is being affected adversely or otherwise by the existing private enterprise system of wholesale or retail marketing of perishable agricultural commodities."

"Evidence submitted by the Department of Agriculture in its reports does not in any manner support the statement,

that the present handling of perishable agricultural commodities is attendant with many uneconomic practices, greatly increasing costs and causing undue losses, excessive waste, spoilage, and deterioration, which result in producers receiving prices far below the reasonable value of their products, in unduly and arbitrarily enhancing costs of operations in such markets, and increasing the price of food to consumers; that the prices of all perishable farm commodities are directly affected by the prices made on these public markets and are adversely affected by the unduly burdensome costs resulting from obsolescent and inadequate facilities.

"In fact some of their figures lead us to believe that they have been produced out of thin air. Letters from wholesale produce jobbers indicate that their loss in handling fresh produce from the time they receive it until it is passed on to the retailer, institution, or restaurant, is virtually negligible. The charge has been made by the bill's proponents of undue losses, but as indicated in these letters, excessive loss only seems to take place when a buyer is guilty of overbuying. The efficient operator suffers practically no losses.

"The declaration states that the failure to provide modern facilities has been due largely to the inability of farmers, dealers, brokers, commission merchants, and others, individually or collectively, to obtain through regular financial channels the relatively large amounts of capital necessary for the construction of modern facilities.

"When there has been need of improvement in this country in any industry, American financial institutions have always stood ready and willing to provide the finances. They are noted for their shrewdness and sagacity and for their ability to truly and efficiently analyze the situation and the possibility of success. If there has been a failure to obtain through regular financial channels the money required for these so-called modern markets, it has been because the propositions submitted have been unsound, and there existed no reason for change. We are convinced that whatever obsolescence may be present in the markets in this country can and will be rectified by private interests and through the forces of competition.

"The fact that the bill provides for the 25 million dollar Marketing Facility Mortgage Insurance Fund with further provisions:"

if there should not be sufficient money in the insurance fund to enable the Secretary to make payments to mortgages as provided . . . the Secretary may make and issue notes to the Secretary of the Treasury to obtain funds to make such payments

"is sufficient to indicate more than a reasonable doubt by the Department of Agriculture and the writers of the bill that the projects will pay out."

"The 50 million dollar Market Facility Loan Fund described in this legislation is hardly sufficient to take care of all the markets which the Department of Agriculture insists are obsolete and antiquated, considering that the estimate for relocating the

wholesale market in New York City alone is 140 million dollars. In the judgment of the Association the expansion of government loaning agencies should be curtailed at this time and not extended.

"Certainly the experience of the Secretary of Agriculture or his subordinates does not qualify them to make decisions on loans of this kind, when established financial organizations will not make such loans without government guaranty, because they are unsound. The Reconstruction Finance Corporation, one of the government's largest loaning agencies, draws a distinction between operating loans and investment loans and are now authorized to make operating loans only. Then again this agency was designed to meet an emergency situation which private banks were not in position to handle and was never intended to compete with private enterprise. Loans made under this bill would always compete with private enterprise.

"Revolving funds are proposed and with a maturity on loans of up to forty years. It is questionable whether these markets will be needed even ten years hence. New methods of merchandising such as the growth of chain stores and cooperatives, farmers markets and road stands, to say nothing of the increasing popularity of frozen foods, will tend to reduce the volume, as also will the decentralization of business in the larger cities."

### Eligibility Requirements

Under "Eligibility Requirements" the bill provides:

(a) That the proposed market facility will reduce the cost of distribution.

(b) That it will be so located and designed to make possible direct loading and unloading of both rail and truck shipments into or from the buildings of handlers.

(c) That sufficient land for expansion be included; and that no more than one-third of the total cost of the facility is to be expended for the acquisition of land, graded and placed in condition for construction.

(d) That there will be no discrimination against any commodity or person in its operation.

(e) That rentals and other charges must be approved by the Secretary; and that reports must be made at regular intervals to the Secretary.

(f) That title to the facility or any part thereof cannot be transferred or encumbered.

In another section it is provided that maximum charges which may be received for the use of the market facility shall be subject to the approval of the Secretary.

"However, with all these precautions, at no point in the bill is there a provision for compulsory requirement of proof as to the financial soundness of the projects to be considered. Certainly the reports of investigation regarding the need for the facility by the Department of Agriculture do not fall in this category.

"Regarding other provisions of the bill regarding non-profit operation, cold storage facilities, rail facilities, and control of operation, we submit: With respect to the apparent elimination of the provision that only market facilities operated on a non-profit basis will be financed, it is our firm belief that inasmuch as the bill will be interpreted by the Department of Agriculture Section (12-f) reading:

That the rentals and other charges for the use of the proposed market facility will be established at reasonable levels approved by the Secretary and designed to meet the obligations, defray the costs of maintaining and operating the proposed market facility, and provide reasonable reserves;

"with decision resting in the Department, will be interpreted to pro-

*(Continued on page 64)*

# Testimonial Dinner for Ralph C. Stokell

INDUSTRY friends gathered on the evening of June 15 at the Belmont Plaza Hotel to attend a dinner honoring Ralph C. Stokell, general manager of the National Cold Storage Co., New York. Over fifty warehousemen were in attendance to pay their respects. Numerous telegrams and letters from industry leaders in all sections of the country attested to the esteem in which Mr. Stokell is held.

*Ralph C. Stokell*

Representatives from the national associations and various sectional organizations extended felicitations on behalf of their membership in commemoration of Mr. Stokell's entry into the food and food preservation business fifty years ago.

After completing his schooling he entered the employ of Swift & Co., in Boston in July 1900 and for seven years thereafter was employed in branches of Swift & Co. principally throughout the East. His first introduction to the cold storage business was in 1907 when he affiliated with a Swift enterprise, the Hollis - Rich Butter Co. and Hollis Cold Storage Co., in East Boston remaining until 1911 when he became associated with the Boston Terminal Refrigerating Co. as its treasurer. In 1922 and 1923 he was in the employ of several large houses in Chicago.

In 1924, the Cold Storage Division of The American Warehousemen's Assn. was becoming increasingly active in its membership services and the directors in their search for a well qualified and experienced warehouseman to head up the association's office on a full time basis, selected Mr. Stokell as its first executive secretary in which capacity he remained until 1928 when he assumed his present company position which he relinquished on July 1. In 1930 and 1931 he served as treasurer and vice president of the national association.

His current association activities include the treasureship of the New York State Cold Storage Association and the chairmanship of the New York City Association of Refrigerated Warehouses. In January of this year he was elected president of the American Institute of Refrigeration, Inc.

Among the speakers of the evening were President Horace W. Wilson, Philadelphia, American Warehouseman's Assn., Arthur N. Otis, New York and G. D. Allman, Chicago, past presidents of the National Association of Refrigerated Warehouses, Jerry P. Johnson, Washington, D. C., vice president, N.A.R.W. Ward W. Wilson, New York, acted as toastmaster.

Mr. Stokell was presented with a television set in appreciation for his many years efforts in behalf of the industry.

# Pacific States Warehousemen Study Cost Finding in Annual Meeting

THE ANNUAL convention of the Pacific States Cold Storage Warehousemen's Association was held at the Arrowhead Hot Springs Hotel, San Bernardino, Calif., March 8-10, 1950.

Following the opening of the convention, with appointment of committees and report of the treasurer, Wm. Dalton, executive vice president of the National Association of Refrigerated Warehouses, presented an outstanding message on the effect that legislation can have on the basic principles of free enterprise. Dr. Dalton said that every American citizen must decide whether the federal government shall continue to take away more and more and more of their earnings and with that money attempt to provide them with cheaper food, housing, electricity, education, and free crutches and false teeth. The legislation necessary for federal domination over business awaits action in Washington today, he said, under which for the next fifty years and the next fifty after that, citizens of this country would be riding on the coattails of what happens in Washington.

Mr. Dalton then analyzed in some detail some of the social planning features now being developed in Washington including the Brannan farm plan, federal aid to education, repeal of the Taft-Harley Law, federal housing, valley authorities, social security and the increased tax program.

## Report on Executive Committee Meeting

A report on the activities of the N.A.R.W. Executive Committee meeting held at the fifteenth annual convention was given by Glenn F. Dodson, Security Warehouse & Cold Storage Co., San Jose, Calif. Mr. Dodson gave a resume of the subjects considered at this meeting and covered information regarding recommendations made by the Legislative Committee in connection with the Brannan plan, the Farm Market Facilities bill, the Commodity Credit Corporation's request for two billion dollars for buying and erecting storage facilities, Social Security legislation, the Robinson-Patton Act and other legislative developments affecting the warehouse business.

## Officers and Directors 1950

**President, Harlan J. Nissen, Los Angeles, Calif.**

**Vice Presidents, M. W. Young, San Francisco; G. F. Dodson, San Jose, Calif.; J. B. Beard, Modesto, Calif.; Paul V. Henningsen, Portland, Ore.**

**Treasurer, R. J. Bailey, San Francisco, Calif.**

**Secretary-Manager, Jack L. Dawson, San Francisco, Calif.**

**Directors: J. B. Dunbar, Long Beach; Al Lundin, Los Angeles; Ludvig Ubbe, Los Angeles; Paul Ashley, Fresno, Calif.; John Beard, Modesto, Calif.; Glenn Dodson, San Jose, Calif.; Hyland Hinman, Oakland; L. A. Arata, San Francisco; M. W. Young, San Francisco; A. R. Carstensen, Sacramento; P. V. Henningsen, Portland, Ore.**

## Cost Data

M. W. Young, National Ice & Cold Storage Co., San Francisco, gave a report on development of cost data within the industry. He pointed out that from the standpoint of tariff improvements, it is essential for the industry to know its actual cost for performing the storage and handling services rendered as public utilities. Without this data, he stated, it is difficult, if not impossible, to plan and conduct business intelligently or to secure tariff improvements from the Public Utilities Commission in California in connection with rates and charges which are known from experience to be inadequate and noncompensatory.

He pointed out that the need for development of cost data within the industry has been discussed on numerous occasions without any concrete action being taken. They have come to a point where they can wait no longer to place into effect cost finding procedures on an industry-wide basis. To start this work, Mr. Young presented to the convention a simple cost-finding procedure, developed by his company during the past twelve months relating to the finding of cost covering the handling of commodities.

Following his presentation a committee was appointed for the purpose of expediting the development of cost figures for the storage and handling of commodities in refrigerated warehouses. The objectives of this committee are as follows:

1—To promote the use of the touch labor cost formula as developed by the National Ice & Cold Storage Co. on a uniform basis throughout California, with such modifications to the formula as may be desired by each individual operator, not disturbing, however, the basic end result as contemplated by the formula;

2—To encourage California cold storage warehousemen to adopt the proposed formula as promptly as possible in order that rate adjustments may be considered without undue delay.

3—To develop and encourage the industrywide use of a storage cost-finding formula which is essential in the adjustment of low-end storage rates now prevailing in our cold storage tariffs throughout the state.

With respect to the touch labor cost formula it was the consensus of the delegates that this formula should be applied retroactively if possible in order to eliminate any delay in bringing our rate cases to the Commission's attention.

## Technical Aspects

The technical aspects of the refrigerated warehousing business were covered by four speakers, outstanding experts in their individual field, including H. C. Diehl, director, Refrigeration Research Foundation; A. L. Ryall, United States Department of Agriculture, Fresno; Professor F. W. Allen, College of Agriculture, Davis; and Dr. R. B. Legault, Western Regional Research Laboratory, Albany, Calif.

Mr. Ryall reviewed the projects being carried on by the Department of Agriculture at Fresno with respect to grape storage, potato transportation, precooling, storage of dried fruit, and methods for determining ammonia gas concentration in storage rooms, the effect of such gas on commodities stored and means of neutralizing its effect.

Professor Allen of the University of California at Davis outlined projects which are now being carried on

by the university in connection with the refrigeration of various commodities. These included studies of respiration of fresh fruits and vegetables, both before and after harvest; bio-chemical studies; atmospheric studies; temperature influences, humidity studies; general studies on cold storage life; maturity and precooling; quality in stored products; preservation by freezing; oriental fruit fly treatment.

## Concentrated Foods

Dr. R. R. Legault of the Western Regional Research Laboratory, Albany, Calif., explained the important part refrigeration is playing in the development and marketing of new concentrated food products. He pointed out that one of the chief projects of the laboratory is to determine the temperature tolerance of frozen goods. He said that goods taken from storage which have been held at a constant temperature are invariably superior to the same commodity sampled at retail stores. Such a fact, he stated, demonstrates the need for further knowledge as to temperature variations and their effects on commodities. Dr. Legault's remarks demonstrated the importance of the work being done by the Western Regional Laboratory in the interest of the refrigerated warehouse business.

## Diehl Talks on T.R.R.F.

H. C. Diehl, director of the Refrigeration Research Foundation brought the convention up to date on the actions being taken by the Foundation to advance the art of refrigerated warehousing. He pointed out the important part the U. S. Department of Agriculture and various universities were playing in this respect. He outlined the objectives of the Refrigeration Research Foundation and left no doubt in the minds of those present as to the importance of this organization.

He explained numerous projects which are now being sponsored by the Foundation in connection with turkey freezing, retaining qualities of washed shell eggs, storage of candy, coffee and spices, and development of frozen milk concentrates. He announced that a project is now being carried on at the University of Illinois on frozen milk concentrates. He stated that if this project meets with success the benefits will have a profound effect upon the future marketing of milk.

## Warehousemen's Liability

Warehousemen's liability for goods entrusted to them for storage was discussed by Varnum Paul, attorney, of San Francisco. This subject, Mr. Paul said, has been of vital importance over a period of many years. To offer maximum protection, extent of liability for services rendered have been specificially spelled out in the tariffs on file with the commission. In addition they had endeavored to further protect their position by stating their liability on warehouse receipts. They had been advised from time to time of the importance of stamping on the face of such receipts the precise amount of the limitation of their liability for loss or damage under the tariff rates.

During the warehouse strike in the San Francisco Bay area in 1949 the operators were threatened on numerous occasions with suits for conversion of goods due to these strike conditions. At the time the question arose as to whether or not the tariffs and warehouse receipts (in their present form) protected them from this type of suit. In view of the controversial nature of this question the subject was placed in the hands of Reginald L. Vaughan's office for a legal opinion.

After study of the situation a detailed report was made of the actions that should be taken as protection from suits for conversion due to strike conditions. The changes in tariffs and warehouse receipts as recommended in this report have been adopted and are being placed into effect. Future warehouse receipts ordered through the association office will contain an additional provision in the terms and conditions reading as follows:

"As a further condition of storage, it is agreed that the failure of warehousemen to deliver goods to any person entitled thereto shall not constitute a conversion of goods nor subject the warehouseman to any liability whatsoever when such non-delivery results from causes arising from strikes, lockouts, work stoppages, or restraints of labor, from whatever cause."

## Personal Property Tax

A discussion of the California personal property tax law was headed by Paul V. Henningsen and J. W. Hunt. During the months of January and February of each year the large exodus of goods, to avoid taxation coupled with the withholding of goods from public storage during these months for the same purpose, has materially affected the revenue position of the California Warehousing industry. An Interim Committee on state and local taxation headed by J. J. Hollibaugh, chairman, is now engaged in a fact-finding study to determine, among other things if the repeal of the personal property statute would encourage industry and thereby increase employment in California. J. W. Hunt will represent the Association before the Committee for the purpose of informing that body of the members' position.

Mr. Hunt reported in considerable detail the situation in California in regard to personal property taxation and other forms of taxation. Goods in storage on tax day are subject to an Ad Valorem tax like most other forms of tangible property. In most cases when such products are sold, the gross receipts derived therefrom are subject to sales taxes and the owners are subject to other forms of governmental imposts. While this tax is subject to much criticism, its outright repeal is highly improbable although restrictions on its use and improvements on its form and administration are entirely possible.

In regard to tangible personal property taxes, the first most commonly advocated remedy is outright exemption. Exemption advocates justify their contention upon the grounds that the inequalities of the general property tax are magnified when applied to personal property, since most personal property is subjected to a sales tax as it passes to the hands of the final consumer. Of greatest importance to the refrigerated warehousing industry would be to exempt all perishable goods in storage if such goods were moved from storage ninety days subsequent to March 1. If such an amendment could be adopted, he said, refrigerated warehouses on the first Monday in March would no longer have empty show rooms, storage plants, warehouses and elevators.

## Resolutions

Following a discussion of the importance to customers and to the industry of the cold storage warehouse reports issued by the United States Department of Agriculture, a resolution was presented and adopted pledging members of the association to cooperate to the fullest extent with the Department in furnishing accurate statistical data in accordance with the request of that agency.

Resolutions also were adopted in remembrance of Leon A. Bailey, former executive secretary of the association whose death occurred November 2, 1949.

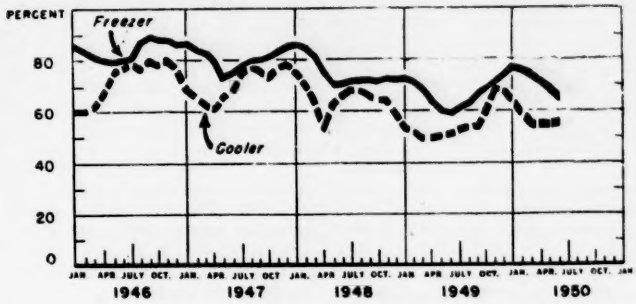
# Cold Storage Holdings

THE seasonal decline in cooler occupancy ended last month. On June 1 public cooler space was 56 percent filled—up two points since May 1. Although well below the average June 1 occupancy, public cooler space was, nevertheless, 6 points above a year ago. Increased cooler occupancy was reported in all regions except in the Pacific, Mountain, and West North Central. In the latter region cooler occupancy, at 80 percent, was unchanged from last month. Cooler space appears to be well utilized in Indiana, Wisconsin, Minnesota, Dakotas, Nebraska, Kansas, Georgia, and Tennessee, as 80 percent occupancy or better in public refrigerated space was reported on the first of this month.

Freezer space utilization, at 64 percent, was down 3 points from a month earlier. This June 1 occupancy was 6 points below average, but 5 points above the June level a year ago. In contrast to the national decrease in freezer occupancy, public freezer occupancy increased in the East and West South Central regions. In the former, occupancy increased 5 points to 88 percent, and the latter 2 points to 58 percent. There was a significant drop in freezer occupancy—10 points—in the East North Central region where only 61 percent of freezer space was utilized on June 1. Moderate decreases prevailed in all other regions as freezer occupancy continued its seasonal decline.

Net weights in both coolers and freezer decreased during May. The former by 2 percent, the latter 1 percent. Cooler-held commodities at 1.3 billion pounds were down 30 million pounds since last month because of significant withdrawals of fresh dried, and evaporated fruits, dried eggs, and selected meat products. On the other hand, cooler-held stocks of nuts, nutmeats, cheese, shell eggs, pork, sausage, lard, and rendered pork fat increased during May. Stocks in cooler space on June 1 were about average for this time of year but exceeded stocks of a year ago.

OCCUPANCY OF PUBLIC-COLD STORAGE WAREHOUSES, 1946-50




Freezer storage stocks, however, were above the June 1 average by 162 million pounds and were some 249 million pounds greater than holdings a year ago. Stocks of dairy products, fish, sausage, and frozen fruits moved into storage during May, but a net out-of-storage movement prevailed for the other freezer items to the amount of 12 million pounds. This net change in freezer weight compares with 3 million pounds moved from storage last year.

Frozen fruits on hand this month totaled 284 million pounds. This amount was the second highest June 1 on record, being exceeded only by the 328 million pounds in storage June 1, 1947. Volume-wise, fruit juices were the leading fruit storage item, followed by stocks of frozen strawberries. These fruit items accounted for more than half of the national holdings of frozen fruits—the former amounted to 42 percent of

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

| | June 1, 1950 | May 1, 1950 | June 1, 1949 | Five-year Average |
|---|---|---|---|---|
| Meat and meat products, lbs. | 671,649 | 749,314 | 672,798 | 658,530 |
| Lard and rendered pork fat, lbs. | 128,679 | 108,105 | 125,823 | 107,005 |
| Frozen poultry, lbs. | 136,608 | 167,000 | 77,823 | 139,130 |
| Creamery butter, lbs. | 135,805 | 109,020 | 51,056 | 36,874 |
| American cheese, lbs. | 184,998 | 153,135 | 117,021 | 110,178 |
| Other cheese, lbs. | 22,320 | 18,418 | 17,744 | 18,258 |
| Shell eggs, cases | 3,413 | 2,147 | 1,943 | 4,883 |
| Frozen eggs, lbs. | 178,667 | 155,108 | 141,361 | 213,880 |
| Apples, bu. | 1,295 | 3,645 | 1,294 | 1,402 |
| Frozen fruits, lbs. | 283,650 | 243,861 | 237,856 | 250,685 |
| Frozen vegetables, lbs. | 221,762 | 241,992 | 186,821 | 159,955 |
| Frozen fish, lbs. | 95,889 | 78,027 | 91,453 | 76,405 |

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

| | Net Piling Space (000 cu. ft.) | | June 1, 1950 (%) | | May 1, 1950 (%) | | June 1, 1949 (%) | | 5-Year Average (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer |
| New England | 2,948 | 6,885 | 43 | 65 | 41 | 67 | 34 | 69 | 60 | 64 |
| Middle Atlantic | 38,581 | 28,953 | 46 | 60 | 42 | 60 | 42 | 52 | 60 | 70 |
| East North Central | 30,142 | 30,519 | 64 | 61 | 63 | 71 | 56 | 59 | 70 | 69 |
| West North Central | 10,170 | 14,538 | 80 | 82 | 80 | 83 | 56 | 69 | 73 | 75 |
| South Atlantic | 8,705 | 5,780 | 61 | 74 | 55 | 73 | 58 | 75 | 74 | 79 |
| East South Central | 4,402 | 3,933 | 77 | 88 | 65 | 83 | 71 | 87 | 82 | 81 |
| West South Central | 7,706 | 7,306 | 62 | 58 | 54 | 56 | 67 | 55 | 74 | 75 |
| Mountain | 1,627 | 1,910 | 80 | 67 | 81 | 68 | 61 | 62 | 79 | 77 |
| Pacific | 16,171 | 21,013 | 42 | 55 | 45 | 59 | 35 | 50 | 50 | 61 |
| United States | 120,452 | 120,837 | 56 | 64 | 54 | 67 | 50 | 59 | 65 | 70 |

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

| | Private and Semi-Private Warehouses | | | | | | Meat Packing Establishments | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Net Piling Space (000 Cu. Ft.) | | Space Occupied—Per Cent June 1, 1950 | | May 1, 1950 | | Net Piling Space (000 Cu. Ft.) | | Space Occupied June 1, 1950 | | May 1, 1950 | |
| | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer | Cooler | Freezer |
| New England | 85 | 113 | 35 | 62 | 39 | 62 | ..... | ..... | .. | .. | .. | .. |
| Middle Atlantic | 950 | 1,140 | 35 | 72 | 40 | 73 | 1,513 | 216 | 85 | 80 | 87 | 82 |
| East North Central | 2,624 | 1,119 | 57 | 36 | 59 | 37 | 4,601 | 1,504 | 88 | 81 | 88 | 84 |
| West North Central | 674 | 1,988 | 94 | 77 | 100 | 79 | 13,270 | 6,045 | 88 | 83 | 93 | 90 |
| South Atlantic | 119 | 877 | .. | 38 | 16 | 50 | 1,280 | 236 | 82 | 100 | 84 | 97 |
| East South Central | ..... | ..... | .. | .. | .. | .. | 403 | 100 | 85 | 89 | 85 | 94 |
| West South Central | 213 | 73 | 37 | 55 | 42 | 17 | 2,525 | 500 | 100 | 100 | 100 | 100 |
| Mountain | ..... | ..... | .. | .. | 89 | 70 | 608 | 391 | 94 | 98 | 91 | 99 |
| Pacific | 1,779 | 2,984 | 13 | 42 | 24 | 46 | 2,723 | 488 | 94 | 95 | 94 | 89 |
| United States | 6,444 | 8,294 | 44 | 54 | 44 | 55 | 26,923 | 9,480 | 90 | 85 | 92 | 90 |

the total; the latter 14 percent. More frozen fruits were in the Middle Atlantic storages than elsewhere in the nation.

Frozen vegetable stocks on June 1 were down to 222 million pounds. Although the decrease during May, 20 million pounds, was almost three times greater than average, current holdings were still at a near record high for this time of year.

Butter moved into storage during May in greater than average amounts —about 50 percent greater. With 136 million pounds on hand, of which 110 million pounds were reported to be Government owned, June 1 stocks reached a new high for this time of year.

Significant into-storage movements of cheese brought total on hand the first of this month to 207 million pounds, of which 185 million pounds were American Cheddar. The increase in cheese holdings during May was four times greater than last year and almost twice the average May to June change.

Shell eggs in storage totalled 3.4 million cases on June 1 vs. 1.9 million cases a year ago. Frozen eggs reached 179 million pounds on June 1 as 24 million pounds moved into store during May.

Frozen poultry declined 30 million pounds to 137 million pounds as compared with 78 million pounds in store last year and average June 1 stocks of 139 million pounds. Turkeys in storage dropped 15 million pounds during May to 77 million pounds.

Beef in storage June 1 amounted to 73 million pounds, reflecting a net withdrawal last month of 18 million pounds, of which 15 million pounds were frozen beef. Frozen beef totalled 64 million pounds which compares with 76 million pounds in storage June 1, 1949, and average stocks for this time of the year of 120 million pounds.

An into-storage movement of 18 million pounds of frozen fishery products during May brought June 1 stocks to 96 million pounds. This compares with 91 million pounds in store last year and 76 million pounds average June 1 stocks.

### Storage Outlook

The reported increase in public cooler occupancy during May, which placed the June 1 level at 56 percent, marked the beginning of an upward cycle which generally lasts till late fall. Based on previous performance, cooler occupancy should increase by two points during June. However, should shell eggs move into storage in near average amounts, which has not been the case so far, cooler occupancy could increase by 3 to 5 points as evidenced by the 5-year average occupancy for the periods ended 1944 and 1945. The seasonal low in freezer occupancy was probably reached on June 1. From now until the end of the year there should be a gradual increase in freezer utilization. Should the 5-year average (1945-49) pattern prevail, public freezer occupancy next month will be up 3 points to 67 percent.

## Cold Storage Stocks Frozen Fruits and Vegetables

A SIGNIFICANT decrease — percentage-wise—in the portion of selected frozen fruits in retail size packages took place during April, according to container size reports received from warehousemen. Twenty-four percent of the frozen peaches, raspberries and strawberries classified as to container size were in packages of one pound or less on May 1.

FROZEN FRUITS AND VEGETABLES IN ONE POUND PACKAGES AND LESS IN STORAGE MAY 1 AND APRIL 1, 1950 (000 LBS.)

| | May 1, 1950 | | Apr. 1, 1950 | |
|---|---|---|---|---|
| | Lbs. | Pct. | Lbs. | Pct. |
| Peaches | 3,033 | 39 | 4,256 | 45 |
| Raspberries | 2,057 | 15 | 3,152 | 19 |
| Strawberries | 1,657 | 25 | 4,105 | 34 |
| Asparagus | 956 | 63 | 1,079 | 63 |
| Beans, lima | 11,176 | 51 | 13,872 | 55 |
| Beans, snap | 8,345 | 67 | 10,156 | 64 |
| Corn, sweet | 6,012 | 45 | 6,955 | 46 |
| Peas, green | 14,046 | 57 | 17,972 | 59 |
| Spinach | 12,621 | 76 | 9,794 | 79 |

This compares with 30 percent of the selected fruits in consumer packages on April 1 and reflects the sharpest percentage drop in retail packaged stocks during any one month since container size data has been collected. A year ago this time stocks of frozen fruits in retail packages amounted to 23 percent of total stocks classified. However, during the first quarter of 1949 the portion of fruits in consumer packages amounted to 28 percent of total stocks classified whereas during the same period this year 34 percent of fruit holdings were in the smaller containers. Retail packages of strawberries, down 9 percentage points from April 1 stocks, showed the greatest decrease, while peaches and raspberries followed with decrease of 6 and 4 points.

May 1 storage stocks of the six selected frozen vegetables amounted to 150 million pounds. Ninety-one million pounds, or 60 percent of the total stocks were classified by warehousemen as to container size. Approximately three-fifths of the classified stocks were reported to be in retail containers. The relation of consumer to wholesale size containers for the selected vegetables as a whole has remained at this ratio since August 1949. A year ago this time 65 percent of the classified holdings were in packages of one pound or less. Snap beans in consumer packages showed a percentage gain of 3 points since April 1 while the portion of asparagus in this type container remained the same. The remaining vegetable items showed decreases in the percentage of classified stocks in retail containers, with lima beans down 4 points, spinach 3 points, green peas 2 points, and sweet corn down 1 point from April 1 stocks.

## Southwestern Chapter N.A.R.W.

THE annual spring meeting of the Southwestern Chapter, National Association of Refrigerated Warehouses was held May 19 at the Shamrock Hotel, Houston, Tex. Approximately 20 members were present.

Wm. Dalton, executive vice president of the National Association discussed chapter and national industry developments and elaborated on the executive meeting held at Omaha. National legislation now pending was mentioned and the members were urged to keep on the alert for any bills that may be adverse to the refrigerated warehousing industry.

A round-table discussion followed Mr. Dalton's talk in which many phases of the refrigerated warehousing industry were discussed including employer - employee relations, services to the public, cleanliness in storages, and advertising the refrigerating industry.

Dr. H. C. Diehl, director of the Refrigeration Research Foundation, reviewed new methods the Foundation had developed in storage of food products in cold storage. He pointed out, among other things, that it only remained to be shown that it is economically feasible to store high grade green coffee in cold storage since the Foundation has proven that cold storage definitely keeps this commodity better than ordinary open storage and a much finer cup of coffee was the result therefrom.

Following Mr. Diehl's talk, there was considerable discussion of perishable products of the southwest including native pecans, storage of Texas grapefruit and wax, or Bermuda onions. Dr. Diehl promised cooperation of the Refrigeration Research Foundation in this connection.

## Philadelphia Warehouse Strike is Settled

AFTER being on strike two days, employees of Philadelphia Cold Storage Warehouses accepted an increase of $3.00 per week. They had asked for additional wages of $5.00 a week and a number of fringe benefits, none of which were granted. The agreement was entered into between the A.F.L. warehousemen and the Quaker City Cold Storage, Philadelphia Cold Storage Co., Industrial Cold Storage Co., Arctic Cold Storage Co., and the General Cold Storage Co. Another warehouse operated in connection with the Reading Terminal Market whose employees are in a different union were not affected. The contract was dated May 1 and runs for a year.

## Poultry Institute Plans Field Service Program

BETTER production, processing and merchandising make up the 3-way goal of the 1950 field service program launched by the Institute of American Poultry Industries. This field work will be carried out mainly through a series of regional meetings,—a sort of "grass roots" fact finding conferences, according to E. W. Priebe, Jr., chairman of the Institute's board of directors. They will be open to non-members and members alike. Mr. Priebe says they expect to spend a good deal of time on local problems, but they are also planning to do considerable work on national problems, such as processing plant sanitation, the practical application of the government's new grading and inspection program, increasing consumer acceptance through the marketing of hormonized birds, and increasing sales and consumption through improved distribution to nearby outlets and small markets that are "off the beaten path".

## Handling Studies Seek Reduction of Costs

THE physical handling of fresh fruits and vegetables in the marketing channel accounts for nearly half of the total marketing cost. How much this expense can be reduced through more efficient use of labor and equipment is being studied in a Research Marketing Administration project carried on by the Production and Marketing Administration, in cooperation with distributors.

The project is designed to show the best applications of labor and materials handling equipment, such as hand trucks, conveyor systems, skids, pallets and fork lift trucks, and combinations of these. In their work the researchers are not only introducing new equipment in stores and warehouses but also developing methods of improving the efficiency of that on hand.

## Shoemaker Addresses Ice Cream Makers

THE spring conference of the International Association of Ice Cream Manufacturers held May 20 to 25 at White Sulphur Springs, W. Va. was attended by affiliated association officers and secretaries. One of the speakers was Garth Shoemaker of The Hygeia Refrigerating Co., Elmira, N. Y., who presented an address "Freedom is Your Business," at an industry luncheon Tuesday noon.

*Refrigerated Warehousing*

## 50 F Storage Temperatures For Hatching Eggs

THE best storage temperature for hatching eggs is 50 degrees Fahrenheit, according to recent tests conducted at the Beltsville Research Center by the U. S. Department of Agriculture. Temperatures of 30 and 40 degrees were found to be definitely harmful and those of 60 and 70 degrees tended to reduce hatchability. However, when the storage temperature was held at 50 degrees, the hatchability of some eggs was preserved for as long as 42 days.

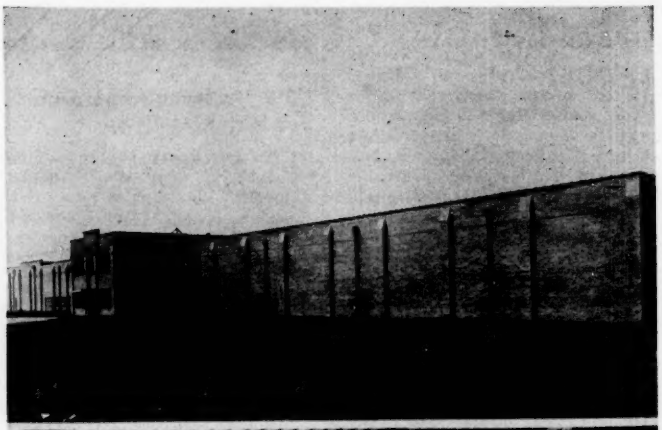
The findings indicate that eggs may be held successfully at 50 to 55 F. for 7 to 21 days. Although hatchability was preserved for as long as 42 days in some eggs held at 50 degrees, no chicks were hatched from eggs stored at 55 degrees for that long a period.

The Beltsville studies were undertaken by the Bureau of Animal Industry to help provide practical information for the hatching industry with which to combat one of its major problems. Today only about 70 out of every 100 eggs placed in commercial incubators actually hatch. Part of this loss is due to infertility of the eggs, but it is estimated that commercial hatcheries discard at least 300 million eggs every year because the embryos have died at some stage of incubation. This annual waste amounts to enough eggs to load 1,388 freight cars.

## Warehouse Builds Addition For Use of Tenants

A REFRIGERATED warehouse addition to contain freezer storage space and modern, quick freezing facilities has been constructed by the Grand Trunk Warehouse & Cold Storage Co., Detroit, Mich. This new one-story building 80 x 185 ft. is connected with the main building and was erected primarily to rent as stores to tenants which would feed into the main public refrigerated storage warehouse.

The addition contains sharp freezing rooms, holding freezers and coolers, office space, steam supply, power, hot and cold water. Each space to be rented has its own office and shipping, as well as freezer and cooler space, all on the ground floor at truck level height and the entire building has a side track available. There is an unlimited floor load and the ceilings are 12 ft. for pallet operations.



# Ten Million Pound Freezer

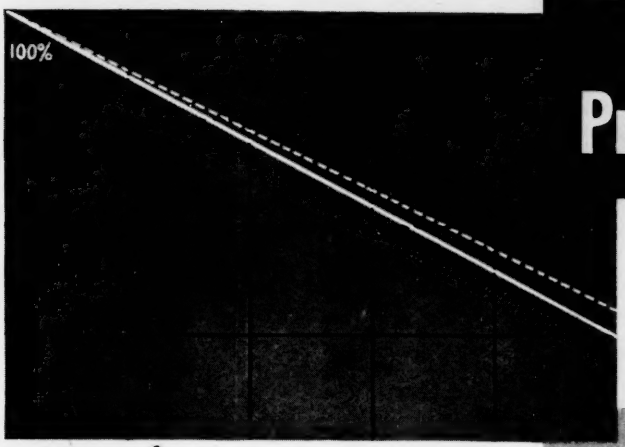
A NEW food freezing plant, Continental Freezers, Inc., has opened at Lafayette, Ind., headed by Kenneth F. Stepleton, president and acting manager. Formal opening was held Saturday, April 15, at which time a group of food producers were conducted on a private tour of the plant. Sunday afternoon it was opened to the public and several hundred visitors were conducted on guided tours. About 25 office personnel and dock workers will be employed. Mr. Stepleton formerly was manager of the Zero Food Storage Corp., Chicago.

**Views of new plant, Continental Freezers, Inc., Lafayette, Ind. Upper, the plant from the outside. Center, the broad loading dock provides ample space for the mechanized handling equipment. Pipes and connections along the building wall are part of the defrosting system. Lower, in the freezer storage room the goods are piled up to four pallets high. The refrigerating units are above the aisle.**

The plant is located on Concord Road just south of Highway 552, southwest of the city. The warehouse building and equipment are valued at $750,000. Two large freezer rooms will hold ten million pounds of merchandise at one time. With a normal volume turnover estimated to be four times a year, Mr. Stepleton estimates the company will handle some 30 million pounds of food a year.

The building is 476 feet long, 116 feet wide and is 20 feet high on the inside. Walls and floors of the freezing rooms are insulated with corkboard, covered with steel reinforced concrete. The entire front of the building will be landscaped. The rear side of the building, on the west, is one long truck and rail dock. A Nickel Plate railroad side track has been built to the plant. The building is heated by radiant electric heat, and four large compressors in the plant's engine room hold a minus 10 F temperature in the freezing rooms.

# POWER COST DROPS with Product Load

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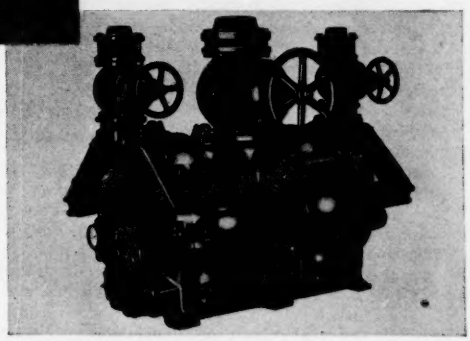
And through flexibility of output, a York V/W Ammonia Compressor permits more efficient scheduling of man hours and product loads. For all the facts about York's V/W Ammonia Compressor—the result of 65 years of leadership in mechanical cooling development and *field-proven* for over 12 years—see your nearest York Representative. Or write direct for free booklet. York Corporation, York, Pennsylvania.



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# Frozen Foods

*Reg. U. S. Pat. Off.

PREPARATION PACKAGING FREEZING STORAGE DISTRIBUTION DESIGN CONSTRUCTION EQUIPMENT

## Storage of Frozen Cooked Poultry and Vegetables

EXPERIMENTS at the Western Regional Research Laboratory have provided information on several phases of commercial preparation and storage of precooked frozen foods. They concern the effect of formulation variables, cooking methods, packaging, and storage tempertures on items that would be used in mixtures such as chicken a la king.

It has been shown that older chickens of good quality can be successfully utilized in precooked frozen poultry products. Tenderness can be achieved by suitable cooking methods, and the older birds yield a more flavorful product than the younger birds. Since the appearance of the uncooked birds is unimportant in precooked products, malformed poultry of otherwise high quality can also be used in these products. Therefore, it should be possible to produce frozen precooked poultry products relatively inexpensively.

Various cooking methods have been investigated to determine whether turkey that was roasted would have any flavor advantage over turkey cooked by other methods. It was found that after the turkey was combined with other ingredients used in creamed turkey, a trained taste panel could not distinguish the turkey that had been roasted from that cooked by other methods. The fat from the roasted birds showed accelerated rancidity development that would prevent its utilization in the creamed product. Simmering or pressure cooking were, therefore, preferred over roasting.

The type of packaging material was found to be of greater importance than storage temperature for retention of quality of precooked frozen creamed turkey, chicken, and peas. In an excellent container (a sealed can or approximate equivalent in protective qualities), storage temperatures ranging from 10 F to minus 30 F had no effect on off-flavor development in these products after storage for periods of 8 to 12 months. In a less protective container, one often used in commercial practice, the storage temperature was important in maintaining quality.

Cooked frozen peas have been found to develop an off flavor in storage more rapidly than similar peas that were adequately blanched. However, when the cooked vegetables were combined with a sauce, as they would be in a typical frozen mixture, their storage stability was essentially the same as that of the blanched peas.

It has been shown that the reheating period is of great importance in retaining high quality in precooked frozen foods. Slightly prolonged periods of reheating cooked frozen vegetables caused enough deterioration in color and texture to nullify the advantages obtained by use of high-quality raw material and optimum conditions of processing and storage.

## Frozen Food Convention Announces Western Tour

THE Colorado Rockies, Royal Gorge, Yosemite Park, and The Grand Canyon are among the famous scenic spots included in a tour of the West that has been arranged as winter vacation attraction for delegates attending the 1951 National Frozen Food Industry convention to be held in San Francisco from February 27 to March 2. Announcement of the tour was made by Mr. E. J. Watson, Chairman of the 1951 Convention Committee.

Complete details concerning the itinerary of the tour and the arrangements made to accommodate convention delegates will be incorporated in a brochure to be released at a later date. Meantime, it already has been announced that the tour will leave Chicago on Friday, February 23, proceed Westward through the Colorado Rockies and the Royal Gorge, arriving in San Francisco on Monday, February 26. The return trip after the convention will leave San Francisco on Saturday, March 3, with stop-offs at Yosemite Park, Los Angeles, and The Grand Canyon. The tour returns to Chicago on Friday, March 9.

Announcement of this tour was made early in the belief that many delegates planning to attend the convention from the East, South, and Middle West will wish to take advantage of this opportunity to visit the scenic wonders of the West, thus combining a vacation with the business trip.

The Committee already is making plans for an outstanding convention program, and everybody with an interest in the frozen food industry will want to be on hand in San Francisco, February 27 through March 2.

## Preparation of Frozen Apple Juice Concentrate

INVESTIGATIONS on frozen apple-juice concentrate at the Western Regional Research Laboratory have produced data on the following three factors: effect of concentration on flavor, the range of temperature best suited for concentration, and evaluation of methods of preparation involving additions of apple essence.

The studies have shown that concentration of apple juice at temperatures appreciably higher than those used commercially for orange juice is feasible. Temperatures permissible in concentration are high enough so that commercial vacuum pans appear to be suitable for this process.

Fourfold concentrates were prepared by three methods, as follows: First, apple juice was concentrated 6-fold and sufficient fresh juice was added to make the 4-fold concentrate. This method is similar to that used in the manufacture of concentrated orange juice. This concentrate was considered inferior in flavor and aroma to that prepared by the two methods that follow.

Second, volatile flavor constituents were stripped from apple juice at atmospheric pressure and concentrated 100-fold. The stripped juice was concentrated to 4-fold and combined with the flavor concentrate. This method produced a reconstituted product that was indistinguishable from fresh juice.

A third method consisted of concentration of stripped juice to 6-fold, followed by addition of 100-fold concentrated flavor fraction plus fresh juice to 4-fold concentration. Like the product of the other method involving return of flavor concentrate, this product was considered excellent, and superior to the method mentioned first. Between the two meth-

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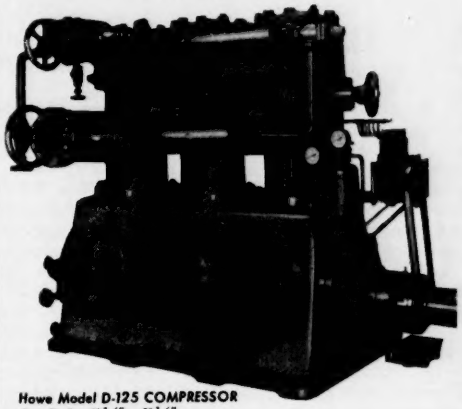

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ods involving addition of stripped flavors there appeared to be no difference in quality of product.

In the studies of temperature suitable for concentration, 130° F. and lower did not appear to affect the flavor of the recombined product. Use of 145° F. resulted in a product having a distinguishable amount of off-flavor. Recombination of products of concentration resulted in a juice considerably lighter in color that the original juice. This loss of color became greater as temperature of concentration was increased.

## Indirect Immersion Freezing Of Small Packages

EXTENSIVE research at the Western Regional Research Laboratory has shown that indirect immersion freezing offers major engineering advantages over current commercial practice for freezing foods packaged in small containers. The advantages lie in the relatively high heat-transfer rates that are easily attained in immersion freezing systems. Decrease in equipment size and in equipment costs, and probable decrease in operating costs follow directly from increased heat-transfer rates. In addition to the higher rates of heat transfer, other advantages are avoidance of periodic shutdowns for defrosting of heat-transfer surfaces, flexibility as to the size and shape of containers handled, and ease of mechanization to minimize labor costs. Automatic can-handling equipment from the food canning industry is available for use in the development of highly mechanized immersion freezing plants.

In the recent studies freezing-rate data were obtained for liquid food products having relatively high thermal conductivities, for example fruit juice and puree, and for loose aggregates having low thermal conductivities, such as drained peas, diced carrots, sliced apples, and Brussels sprouts. The effects of brine temperature, brine velocity, container size, and manner of exposure to the brine stream were determined, as well as the effect of can rotation during freezing.

Rates of freezing by indirect immersion were found to be several times as fast as those obtained in conventional air-blast package-freezing systems. Rotation of cans resulted in a large reduction in freezing time for liquid products but had no material effect on nonliquids. The freezing time for natural-strength orange juice in rotated No. 2 brine-immersed cans was one-fifth of that required for stationary cans frozen at the same ambient temperature by the air-blast method. The time required to freeze peas in cans by the immersion method was approximately one-third of that required to freeze peas in cartons by the conventional air-blast method. The results of the studies provide a basis for the evaluation, operation, and design of immersion freezing systems.

The initial cost of a liquid-tight container is higher than the initial cost of a paperboard carton. However, opposing the cost differential between cans and carbons are reduced operating and equipment costs in the immersion freezing method, and possible advantages in the marketing of products in cans. The can is easy to handle during distribution and in the home, and affords more protection to the food than is afforded by the carton. Frozen orange juice concentrate is a case in point.

Caution is required in the freezing of nonacid foods in cans. Public health authorities have issued regulations covering the freezing of nonacid foods in hermetically sealed containers. Precautions required during processing are simple, but must be observed scrupulously.

The potential advantages of indirect immersion freezing may lead to wider application of the method, certainly to further consideration of the method by frozen food processors.

## Frozen Concentrate Grades Accepted

CHANGES in three proposed grades for frozen citrus concentrates were agreed to by U. S. Dept. of Agriculture officials, after receiving recommendations of an industry group which met in Washington Monday, June 12, under the auspices of the National Association of Frozen Food Packers. Because of objections to the grades originally proposed, the frozen food packers called a meeting to obtain national industry recommendations on revisions, and practically every major packer of frozen citrus concentrates had a representative present to participate in developing recommended grades. The companies represented were: American Fruit Growers, Birdseye-Snider Co., Damerel-Allison Co., Minute Maid Corporation, Pasco Packing Co., Real Gold Citrus Products, Snow Crop Marketeers, and Tree Sweet Products Co.

During the course of the meeting, industry representatives discussed in detail most features of the proposed grades for frozen concentrated orange juice, frozen concentrated grapefruit juice, and frozen concentrated blended grapefruit juice and orange juice. A number of changes in the proposed grades were believed necessary to insure their workability for packers in all producing areas. U.S.D.A. representatives present gave sympathetic attention to these recommendations and assured the industry group that the necessary changes would be written into the grades.

## Inspection Service Covers Frozen and Iced Shrimp

ON April 21, 1950, the Food and Drug Administration issued a draft of proposed regulations for the expansion of the Seafood Inspection Service to cover frozen and iced shrimp products. At that time the industry was invited to submit comments and suggestions in writing.

Replies received indicate that serious consideration of this draft had been given by both packers and processors of shrimp products. Comments and proposals received in writing indicate further constructive suggestions would be possible through the holding of conferences with interested persons. In response to requests that the final date for receiving comments be extended to permit such informal meetings, the closing date was postponed to June 15.

At these meetings an opportunity was given all interested parties to discuss the provisions of the proposed regulations for the inspection of shrimp and to offer comments and suggestions. Formal applications for this voluntary inspection will be received after regulations have been promulgated in final form.

## New Home Freezing Unit

HOME freezing of fruits and vegetables in from two to ten minutes time through development of a compact, portable quick-freeze unit by Dean W. R. Woolrich of the University of Texas Department of Engineering, Austin, Tex.

The unit has been designed for home and small locker plant use. It will have the same proportions as a will have the same proporions as a five-gallon ice cream freezer and will be operated only when needed. The new unit will do a "commercial job" at home, Dean Woolrich said, in that it will freeze fruits and vegetables without destroying flavor and body as is done now in standard quick - freeze equipment used by small locker plants.

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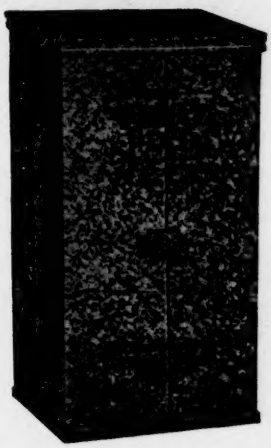

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## Government Lending

*(Continued from page 52)*

hibit anything but a non-profit organization, cooperative or otherwise, meeting the requirements. This is the same as a non-profit clause and certainly is contrary to American principles and condemned by our Association."

"Likewise, with respect to the elimination of public cold storage warehouses of more than 10,000 cubic feet. Maybe we should feel assured that the refrigerated warehouse industry is amply protected. But we don't. Why? Every report issued by the Department of Agriculture to date has recommended, along with other facilities, the inclusion of a public refrigerated warehouse, to be leased to private individuals. Public cold storage warehouses, in our opinion, are eliminated only until the market is built and the need for a public refrigerated warehouse in the market area has made their position strong enough to insist upon it."

### Government Aid Followed by Government Control

"Just as night follows day, so government aid is followed by government control. This bill places full and complete control in the Secretary of Agriculture, not only in making the loans, but in the regulation and operation thereof when completed. In fact when you consider that the Department of Agriculture makes the investigations resulting in the recommendation for relocation of the wholesale market in a city; then approves either the guaranty of a loan made by others or makes the loan itself; and then lays down the regulations for the operation of such markets, rates, hours, etc. or must approve same, you have in the Secretary of Agriculture, the prosecutor, the defense and the jury, in one package; certainly not the American way of life; and a continuance of the dangerous socialistic trend now entirely too evident in our day-to-day affairs. This resting of full authority in one man or in one employee is contrary to good business practice and no one individual should have so much power.

The road to socialism is paved with good intentions. Socialism stifles free enterprise. We objected to the previous measures because they were contrary to American principles and a threat to free competitive enterprise; and we most emphatically renew our objections on the same basis with respect to the bill now under consideration."

## Packing Plant

*(Continued from page 28)*

Officials of John Morrell & Co. who attended the open house ceremonies included R. M. Owthwaite. a vice president of the company and general manager of the firm's Topeka, Kansas plant, James S. Austin, sales manager of the company's Ottumwa, Iowa plant, home of the general offices, John W. Schmidt, assistant manager of the branch house division, E. F. Paxson, manager of the savory foods division, R. D. Nelson, sausage sales manager, and Hollis F. Peck, manager of the company's public relations department.

Architects for the addition to the Morrell branch were Henschien, Everds and Crombie of Chicago, with Roy Kelley of Los Angeles acting as resident architect and superintendent. The building contractor was the T & S Construction Engineers, Inc. of Los Angeles, and refrigeration was provided by the York Company through their Los Angeles office.

## Air Conditioning Assn. Holds Annual Meeting

*(Continued from page 22)*

ship was halted by the representatives of business working through their locally-elected congressional representatives. "The job cannot be left to professionals such as I and the heads of other trade associations," Mr. Moody said. "It must be done by each business man as a local voter and as a potent influence on other local voters. Each must tell his senator and congressman, by mail, telephone, and by personal call in Washington how and why he feels as he does on political proposals. And if those views are strongly expressed on the same 'or else' basis used by labor and agriculture, it is highly persuasive."

"While a legislator is not unmindful of the value of cash contributions to his next campaign fund, he is very sensitive—much more sensitive—to the voice, the insistent voice, of the voter from his own home bailiwick."

Mr. McCoy outlined the activities in which the Department of Commerce is engaged on behalf of American business. He particularly stressed the marketing aids available to industry and the efforts of the Secretary of Commerce to clarify the anti-trust situation which harried business in general. Mr. McCoy emphasized the need for and the possible effects of closing the dollar-gap in the United States' foreign trade situation and its essentiality to the future peace and well-being of the whole world.

An interesting announcement was made by George S. Jones, vice-president of Servel, Incorporated, and Chairman of the Distribution Council of the Department of Commerce, who introduced Mr. McCoy. Mr. Jones said that, just before the convening of the ACRMA meeting that day, word had been received from Washington that Mr. McCoy had had his official responsibilities greatly increased and that, among these responsibilities, was that of the control of all United States exports. "In the light of the global cold war" said Mr. Jones, "A high tribute has been given to the experience in international commerce, of our speaker, Mr. McCoy."

### Officers and Directors

In addition to A. P. Shanklin as president, other Association officers elected were:

First Vice President, G. E. Wallis, Creamery Package Manufacturing Co.

Second Vice President, F. H. Faust, General Electric Co.

Treasurer, G. A. Heuser. Henry Vogt Machine Co.

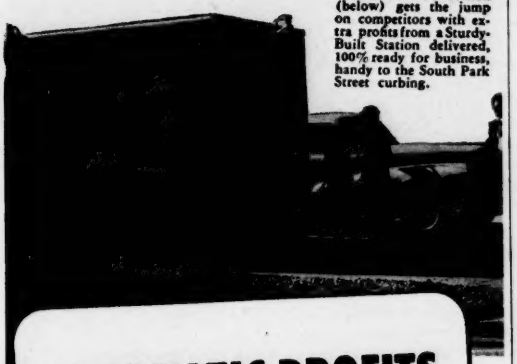
Board of Directors: W. H. Aubrey, Frick Company, Inc., A. J. DeFino, Fedders-Quigan Corp., Maynard Ford, Park-Cramer Co., T. E. Hoye, Savage Arms Corp., George S. Jones, Jr., Servel, Inc., S. E. Lauer, York Corp., H. F. Lehman, Frigidaire Division, General Motors Corp., W. C. Newberg, Airtemp Division, Chrysler Corp., A. B. Newton, Acme Industries, Inc., D. Robertson, Universal Cooler Division, Newport Steel Corp., F. W. Smith, Baker Refrigeration Corp., T. E. Smith, Westinghouse Electric Corp., A. O. Vogel, The Vilter Manufacturing Co., C. E. Wilson, Worthington Pump and Machinery Corp.

## Ice Men Graduate

*(Continued from page 36)*

tion to the four class officers above, the following completed the course: W. D. Bryant, Wabash Ice & Fuel Co., Wabash, John Goff, Consumers Ice & Fuel Co., New Castle; R. B. Henderson, Irvington Ice & Fuel Co., Indianapolis; Clay Kearns, Polar Ice & Fuel Co., Indianapolis; Dennis H. Martin, Greensburg Ice Co., Greensburg; E. H. Mewhinney, Vigo Ice & Cold Storage Co., Terre Haute; B. J. Wheat, Bicknell Ice & Fuel Co., Bicknell; and Roy V. Terneus, Consumers Ice Co., Decatur, Illinois.

# Out in Front..



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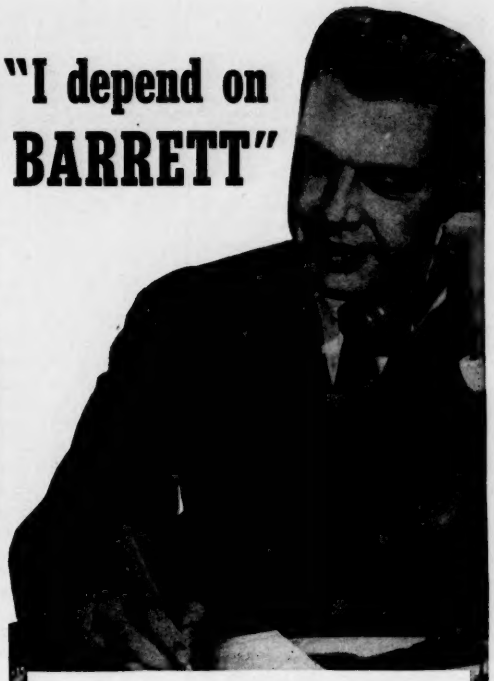

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## Book Reviews

HEATING, VENTILATING AND AIR CONDITIONING GUIDE, 1950 edition. Published annually by American Society of Heating and Ventilating Engineers. 1420 pages. Blue cloth binding. Illustrated. Price $7.50. For sale by Nickerson & Collins Co., Chicago 44, Ill.

This edition of the Heating, Ventilating and Air Conditioning Guide contains, as usual, a storehouse of technical and practical engineering information, with 50 chapters of engineering data, covering all phases of heating, ventilating and air conditioning work. In this one book has been compiled scientific data and technical developments by engineers who have spent their professional lives in the heating, ventilating and air conditioning field. It is concise, complete, authentic and easy to read. The subject matter of each chapter has been carefully checked and brought up to date and, in addition, 44 pages of new material have been added. This is its twenty eighth annual edition. Included is a catalog data section of some 396 pages which serves as a ready reference for engineers, architects and contractors and others who may need catalog data from manufacturers to help them in their design work and specification writing.

INDUSTRIAL MATERIAL HANDLING. Original manuscript by Curtis H. Barker, sales manager Pallet Loader Division, Lamson Corp. Revised and rewritten by Irving M. Footlik, general plant manager Galter Products Co. and instructor Materials Handling, Illinois Institute of Technology; Charles F. Yarham, sales engineer Industrial Handling Associates and instructor Materials Handling, Fenn College; J. Francis Carle, educational director Lincoln Extension Institute. Published by the Lincoln Extension Institute Inc., Cleveland. 392 pages. Illustrated. Price $4.75. for sale by Nickerson & Collins Co., Chicago.

This is the first broad and comprehensive treatment of the important subject of materials handling in industry. It brings together in one volume the basic principles, practices, equipment and applications of materials handling which have been available only through scattered sources. It was designed to fill the needs of industrial personnel, universities, technical institutes, and professional societies for a comprehensive treatment of the subject covered. Its prime objective is to establish a basic philosophy for thinking and acting objectively in effecting savings of money, time and effort in the industrial handling processes.

KENT'S MECHANICAL ENGINEER'S HANDBOOK. Twelfth edition. In two volumes: Power, J. Kenneth Salisbury, editor; Design and Production, Colin Carmichael, editor. Illustrated. Published by John Wiley & Sons, Inc., New York, N. Y. Price $8.50 per volume. For sale by Nickerson & Collins Co., Chicago 44, Ill.

Much of the preliminary planning for this new edition was done by Robert Kent prior to his untimely death in 1947. The present editors kept in constant view the objectives that guided both William Kent and Robert Kent in preparing the previous eleven editions, at the same time remembering that multiple changes have occurred in technical and mechanical fields in the twelve years since publication of the eleventh edition.

The design and production volume, edited by Colin Carmichael, follows closely the outline established by Mr. Kent. It is directed primarily toward the engineers who design and manufacture machinery, appliances, mechanical equipment and other engineered products. With minor exceptions, it was almost completely rewritten with much obsolete material discarded.

The volume on Power, edited by J. Kenneth Salisbury, has been entirely rewritten, excepting a few passages that were reviewed by competent authorities. The broad purpose of this volume is to cover the field of heat-power engineering and transportation as well as the important aspects of fluid flow. Much space devoted in previous editions to steam power and other less active subjects has been reduced to make room for discussion of atomic power, supersonics, jet propulsion and other more modern developments.

The index for each volume, an important component of any handbook, has received much attention. Index entries guide the user to specific discussions as well as to broadly pertinent passages and multiple page references direct him to the various shades of meaning.

## Lauer Is Honored

STEWART E. LAUER, president York Corporation, York, Pa., was among the members of the American Standards Association who received honorary certificates in recognition of their work in the development of industrial standards. Mr. Lauer represented the Air Conditioning and Refrigeration Machinery Association on the Standards Council of the A.S.A.

## Newark Saves Water Supply

AN ordinance to regulate the use of city water in new air conditioning and refrigeration units has been introduced by the Public Works Director of Newark, N. J. The measure requires equipment of three tons and over to have a water conserving device for recirculating the water. Those under three tons would have to be equipped with automatic regulators and check valves. Installations made prior to the effective date of the ordinance would not be affected. However, new installations would require a permit from the Division of Water. The proposed regulation is a result of the city's low supply of water during the last six months and is designed to conserve present supplies.

## New Incorporations

*Berryville, Ark.*—The Berryville Processing and Cold Storage, Inc., filed articles of incorporation with the office of the Secretary of State at Little Rock recently, listing authorized capital stock of $500,000. Incorporators are: C. K. McKendry of Fort Smith, Ark.; J. E. Simpson and F. A. Teague of Berryville; and George M. Basore of Oklahoma City, Okla.

*Flambeau, Wis.*,—Northland Pure Ice Co. Inc., engaged in the manufacture, harvesting, sale and distribution of ice, and the conduct of a cold storage plant has been incorporated with capitalization of 100 shares at $100. per share. Incorporators are: John R. Smith, Luther E. Smith and Ruby M. Smith.

## Fires and Accidents

*Pittsburgh, Pa.* — Heavy damage was caused by fire in the City Ice and Fuel Co. plant here. For a time the entire building appeared threatened by fast spreading flames. However, firemen managed to confine the blaze to the cooling apparatus on a tower and the roof of the building.

## Icy Items

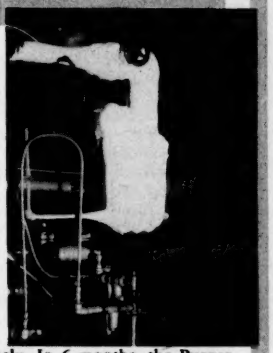
*Ottawa, Ohio*—The Ottawa Ice & Fuel Co., has named Donald T. Rayle of Findlay, manager of its plant here. He has been connected with the ice business for six years in Findlay.

*Dickinson, Tex.*—The Dickinson Ice & Fuel Co. here has decreased its capital stock to $7,500. An amendment to its charter has been approved by the Secretary of State in Austin.

## A.S.M.E. Power Show

THE National Exposition of Power and Mechanical Engineering will hold its exhibit in Grand Central Palace, New York City, November 27 to December 2 in conjunction with the annual meeting of the American Society of Mechanical Engineers.

# ARMSTRONG PURGER SAVES $255.00 IN AMMONIA IN 6 MONTHS . . .



**and Reduces Head Pressure 30 lbs. at Velvet Freeze, Inc., Ice Cream**

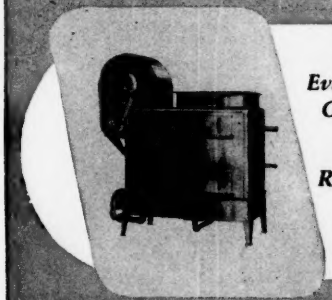
VELVET FREEZE'S 185 ton refrigeration system at Kansas City, Mo., is free of air and other non condensables. An Armstrong No. 370 Forged Steel Purger does it and it is paying off handsomely. In 6 months, the Purger saved 1500 lbs. of ammonia — $255. By reducing head pressure 30 lbs., power costs figured at 1c per KWH were cut $274 a month.

These are a couple of the big reasons why Armstrong Purger users are exceptionally enthusiastic.

Bulletin 192 will tell you more and convince you. Send for it today.

**ARMSTRONG MACHINE WORKS**
860 Maple St., Three Rivers, Michigan

# RECOLD "Dri-Fan"



*The Evaporative Condenser That Revolutionized An Industry*

"DRI-FAN" — an engineering achievement that adds many years of life to evaporative condenser operation. A revolutionary design keeps the fan section free from moisture and brings a big advancement to the commercial refrigeration industry. Troublesome rust and corrosion has been eliminated.

*Investigate "Dri-Fan" before you buy.*

Write today for complete information

Refrigeration ENGINEERING, INC.

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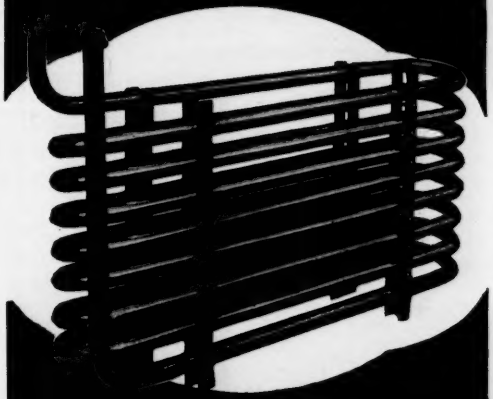
# Coils

Smooth Bends
Perfect Welds
Exact Measurements



For over sixty years, the National Pipe Bending Coils have proved their quality in Ice and Refrigeration plants.

## Glucose Removal Produces More Stable Egg Powder

RECENT research at the Western Regional Research Laboratory has resulted in the preparation of dried whole egg powder of greatly improved stability. Leo Kline and co-workers have found that the small amount of glucose normally present in egg, which is insignificant from a nutritional point of view, is nevertheless a serious factor in promoting very rapid reactions leading to deterioration in both flavor and baking function when the egg powder is stored at moderate to elevated temperatures. These reactions include a previously unreported one between glucose and a fat constituent, cephalin, which is a major cause of off-flavor development.

Modern packaging and processing methods do not adequately protect against these reactions involving glucose. Western Regional Laboratory workers have solved the problem by removal of the glucose prior to drying by means of a resting-cell yeast fermentation process. The conditions under which the process is carried out permit the preparation of glucose-free egg powder having very little residual yeastiness. No-yeastiness in spray-dried samples prepared on a commercial scale was detectable. Previously reported yeast fermentation had failed to avoid the introduction of objectionable flavors from the yeast.

The glucose-free powders, under ordinary unrefrigerated storage conditions, are estimated to be at least six times as stable as the ordinary dried egg powders with regard to retention of flavor, color, and baking properties.

## New Strawberry Developed Ideal For Freezing

DEVELOPMENT of a new strawberry especially suitable for freezing has been announced by Judson Nurseries, Bristol, Ind., national distributor. Called Red-Rich, it is the product of 15,000 plant crossings and 15 years of work. Mass marketing of the new berry later this year is expected to be a major development of 1950 in quick freezing.

The Red-Rich has high sugar content which results in better freezing characteristics. The strawberries can be frozen dry without addition of any sugar or syrup, and, when thawed for table use or cooking, maintain their original shape and flavor. No special freezing processes or new techniques are required to secure outstanding results with the new berries.

Marion Hagertrom, a Minnesota farmer, spent 15 years cross-breeding strawberry plants before he secured the perfect freeze and table breed. He crossed the Fairfax with the Wayzata and combined the best qualities of each parent. The plant's hardiness, its rapid reproduction, and ever-bearing characteristics make it as valuable for home gardeners as it is for professional farmers and berry raisers.

## CONVENTION CALENDAR

**NATIONAL ASSOCIATION OF ICE INDUSTRIES**
October 31—November 3, 1950
Sherman Hotel, Chicago, Ill.
MOUNT TAYLOR, Executive Secretary

**NATIONAL ASS'N. PRACTICAL REFRIGERATING ENGINEERS**
November 28-December 1, 1950
Hollywood-Roosevelt Hotel,
Los Angeles, California
EMERSON BRANDT, Secretary

**SOUTH CAROLINA ICE MANUFACTURERS ASSOCIATION**
December 11-12, 1950
Columbia, S. C.
GEORGE L. ENGLISH, Secretary

## ASSOCIATION DIRECTORY

**AMERICAN INSTITUTE OF REFRIGERATION**
H. T. McDermott, Gen. Secretary, 433 N. Waller, Chicago 44, Ill.

**NATIONAL ASSOCIATION OF ICE INDUSTRIES**
Mount Taylor, Secy., 1706 L St., N. W., Washington 6, D. C.

**NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES**
Wm. Dalton, Exec. Vice-Pres. Tower Bldg., Washington 5, D. C.

**NATIONAL ASSOCIATION OF PRACTICAL REFRIGERATING ENGINEERS**
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CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
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461 Market St., San Francisco, Calif.

CANADIAN ASSOCIATION OF ICE INDUSTRIES
Mrs. Mildred E. Croft, Secretary
317 Eglinton Ave., Toronto, Canada

DELTA STATES ICE ASSOCIATION
R. N. Milling, Secretary
Ouachita Bank Bldg., Monroe, La.

EASTERN STATES ICE ASSOCIATION
Samuel Freer, Secy.-Treas.
12 So. 12th St., Philadelphia, Pa.

FLORIDA ICE ASSOCIATION
Muriel Washburn, Secretary
1926 Silver St., Jacksonville, Fla.

ILLINOIS ASSOCIATION OF ICE INDUSTRIES
W. D. Wright, Secretary
Clinton Pure Ice Co., Clinton, Ill.

INDIANA ASSOCIATION OF ICE INDUSTRIES
Robert W. Walton, Secretary
Board of Trade Bldg., Indianapolis, Ind.

KANSAS ASSOCIATION OF ICE INDUSTRIES
C. A. Berkhiser, Secretary
Manhattan Ice & Cold Storage Co.,
Manhattan, Kans.

KENTUCKY ICE MANUFACTURERS ASSOCIATION
R. T. King, Secretary
429 S. Seventh St., Louisville, Ky.

MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary
131 E. Kalamazoo Ave., Kalamazoo, Mich.

MISSOURI ICE MANUFACTURERS ASSOCIATION
V. A. Esphorst, Secretary
3820 Washington St., St. Louis, Mo.

MOUNTAIN STATES ASS'N OF ICE INDUSTRIES
J. R. Espy, Secretary
Espy Ice Co., 2229 - 15th St., Denver, Colo.

NEBRASKA ASSOCIATION OF ICE INDUSTRIES
Frank Vogelsang, Secretary
W. T. Good Ice Co., Lincoln, Nebr.

NEW ENGLAND ICE ASSOCIATION
Raymond Wilber, Secretary
419 Boyleston St., Boston, Mass.

NEW YORK STATE ASS'N REF. WAREHOUSES
Chas. G. Ashe, Secretary
101 Columbia St., Buffalo 5, N. Y.

NORTH CAROLINA ICE ASSOCIATION
Lewis H. Powell, Secretary
Capital Ice & Coal Co., Raleigh, N. C.

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
Ed. H. Shea, Secretary
2027 N. E. Schuyler, Portland, Oreg.

OHIO ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secretary
The Steubenville Ice Co., Steubenville, O.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
242 Key Bldg., Oklahoma City, Okla.

PACIFIC STATES COLD STORAGE WAREHOUSEMEN'S ASSOCIATION
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

SOUTH CAROLINA ICE MANUFACTURERS ASS'N
Geo. L. English, Secretary
P. O. Box 603, Columbia, S. C.

SOUTHERN ICE EXCHANGE
Richard W. Florrid, Secretary
11½ Forsyth St. N. W., Atlanta, Ga.

SOUTHWESTERN ICE MANUFACTURERS ASS'N
P. A. Weatherred, Secy. Counsel,
Mercantile Bank Bldg., Dallas, Tex.

TENNESSEE ICE MANUFACTURERS ASSOCIATION
W. E. Harlan, Secretary
Mt. Pleasant Ice Co., Mt. Pleasant, Tenn.

TRI-STATE ASSOCIATION OF ICE INDUSTRIES
L. R. Girton, Secretary
260 Boyce-Greeley Bldg., Sioux Falls, S.D.

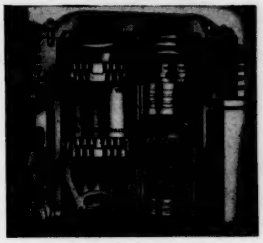
VIRGINIA ICE MANUFACTURERS ASSOCIATION
H. H. Snyder, Secretary
Alexandria, Va.

WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secretary
Diamond Ice & Coal Co., Charleston,
W. Va.

WISCONSIN ASSOCIATION OF ICE INDUSTRIES
Paul F. Hoff, Secretary
1300 East Locust St., Milwaukee, Wis.

**NO OTHER COMPRESSOR VALVE OFFERS YOU ALL OF THESE ADVANTAGES**

- Lower power costs.
- Increased capacity.
- Elimination of enforced shutdowns due to faulty compressor valves.
- Safe and quiet operation of your compressor.
- Increased net profits.



VOSS VALVES are indispensable for use where loads are heaviest — where safety and reliability are paramount. They run smoothly — with less power — at higher speeds — without overheating. You can replace your present valves with VOSS VALVES without any change in your compressor.

*For Better Performance*

VOSS LONG LIFE COMPRESSOR VALVES

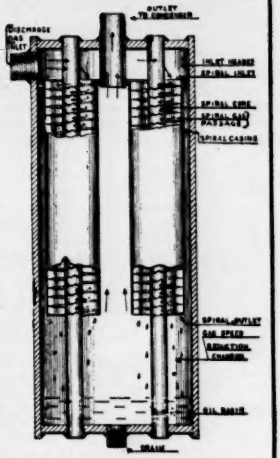
We will be glad to submit estimates, if you will send us the name, bore, stroke and speed of your air, gas, or ammonia compressors of any type or size.

J. H. H. VOSS CO., Inc. 785 East 144th Street NEW YORK 54, N. Y.

**"King Zeero"**

**OIL SEPARATOR**

**STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE**



Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.

*Built for years of trouble free service. Mechanical details on request.*

**THE KING ZEERO COMPANY**
**1447-55 Montrose Ave., Chicago 13, Ill.**

*Penguin* **ICE SERVICE**

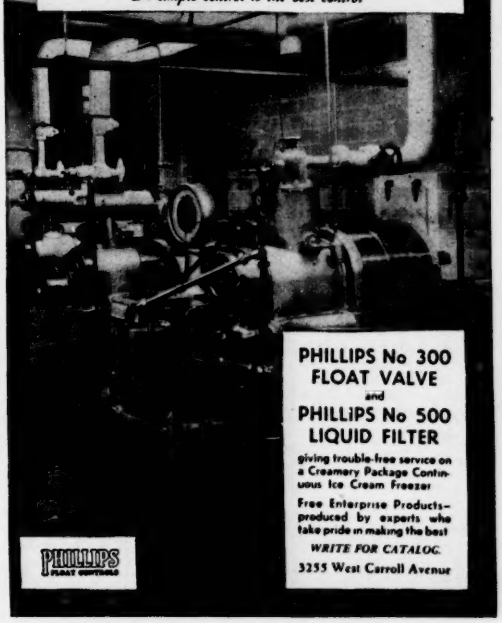
***A COMPLETE ICE VENDING STATION FOR $1975.00***

Yes, for only $1975.00, you can buy a Penguin 24 Hour Ice Vending Station complete with aluminum vending machines, refrigeration system, fiberglas insulated station, completely assembled and ready to plug in.

*FOR DETAILS WRITE TO:*

**TOWAL MFG. CO. DEPT.-A MARION, ILLINOIS**

**H. A. PHILLIPS & CO.—CHICAGO**
DESIGNERS AND ENGINEERS OF REFRIGERATION EQUIPMENT
*"A simple control is the best control"*



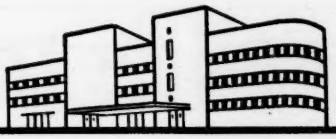
**PHILLIPS No 300 FLOAT VALVE**
and
**PHILLIPS No 500 LIQUID FILTER**
giving trouble-free service on a Creamery Package Continuous Ice Cream Freezer

Free Enterprise Products—produced by experts who take pride in making the best

*WRITE FOR CATALOG.*

3255 West Carroll Avenue

PHILLIPS FLOAT CONTROLS

# NEW PLANTS and  IMPROVEMENTS

**This Department each month presents the more important developments covering new construction, as well as additions, improvements, remodeling, and installations of new equipment in ice and cold storage plants and other industrial plants that use refrigeration. News notes on all such developments are invited.**

### Alabama

*Orrville, Ala.*—An automatic vending station has been located here, 15 miles from Selma, by the Ice Delivery Co. This station will serve the local and farming community as well as transit trade from Selma to Mobile.

### Arizona

*Yuma, Ariz.* — The Southwestern Ice and Cold Storage Co.'s new plant at Gila, St., south of 4th, is now completed. The plant will hold 10,000 tons of ice and will supplement the company's present storage capacity of 15,000 tons. The new building was constructed in the record time of about 12 weeks, costing approximately $80,000. The structure is 186 ft. long, 80 ft. wide and 45 ft. high. A special conveyor to move ice 1,100 ft. from the new storage building to the Pacific Fruit Express ice dock alongside the railroad tracks is now being completed.

### Canada

*Vancouver, B. C.*—Vancouver Ice & Cold storage Co. Ltd., has under construction a new 5-story wing. A 3-story extension over the power plant, with one story on the corner of the Gore Ave. premises, giving a capacity of about 300,000 cu. ft. low temperature space. All zero rooms are intended, but on the lower floor low temperature rooms will be available for the economical holding of lots held by frozen food distributors. Also large shipping floor with unloading platforms and C.P.R. railway siding facilities for about seven cars.

### Florida

*Pensacola, Fla.*—E. E. Saunders & Co. is constructing an ice house at Palafox and Cypress Sts. The building will replace the present ice house located on the right-of-way for the street on Palafox wharf. Estimated cost is $25,000.

*Tampa, Fla.* — The Tampa Cold Storage and Warehouse Corp. is constructing a $250,000 cold storage plant to handle Florida citrus concentrate, meats, seafood and vegetables at 50th St. and the Atlantic Coast Line Railroad. In the first unit, there will be 300,000 cubic feet of below-zero temperature storage space. A blast freezing tunnel will be capable of freezing 50,000 pounds of foodstuffs daily.

### Georgia

*Savannah, Ga.* — The Georgia Ice Co. was recently issued a permit to construct an addition to its existing plant at a cost of $3,500. The building will be of masonry and will be built on Flagler St.

### Illinois

*Chicago, Ill.*—Jefferson Ice Co. has completed installation of additional S & S ice vending machines. The new units are used in dispensing 25 lb. bags of prepared ice.

### Indiana

*Anderson, Ind.*—The White Frost Ice Co. has added a drive-in lunch room and soda fountain adjacent to the plant. The firm also has a large salesroom for refrigerators.

*Bedford, Ind.*—Bedford Home Artificial Ice Co. recently installed three S & S vending machines. The new equipment makes both block and packaged ice available to Bedford residents.

*Columbus, Ind.*—Construction has begun on a modern addition to the Stadler Packing Co. which will more than double the output of its plant. The building will be 156 ft. by 96 ft. and two stories high and will be of steel, tile and glass brick. Most of the new building will be refrigerated. The walls will consist of outer tile four inches thick, a 4-inch layer of foam glass and an inner tile wall four inches thick. Total thickness of the walls will be 13 inches. The roof will have a 5-inch layer of foam glass, while the walls of the coolers will have 8-inch layers.

*Elwood, Ind.*—The Home Ice & Coal Co., which has just celebrated its 50th anniversary, has installed two Sturdy-Built automatic vending machins. These are models 161-2P-25 and 209-2P-25, equipped to dispense 50 lb. block ice and 25 lb. bag of sized ice.

*Jasper, Ind.*,—Swift & Co. is building a new poultry processing plant here. The new plant is expected to process 20,000 birds per day and iceman's ice is to be used to preserve all poultry.

*Newcastle, Ind.*—Consumers Ice & Fuel Co. has completed installation of S & S vending equipment which now makes possible 24-hour ice merchandising. Both block and packaged ice is available at the coin operated depot.

### Kentucky

*Covington, Ky.*—The City Products Corporation's Scott St. plant is now equipped to dispense 25 lb. packages of prepared ice automatically with a newly installed S & S packaged ice vending machine.

### Maryland

*Baltimore, Md.* — American Ice Company has installed S & S processed ice vending equipment at the plant here, also two S & S ice vending machines to handle block ice sales at the 23rd St. Depot.

### Massachusetts

*Boston, Mass.*—Four new S & S ice vending machines, installed by Boston Ice Co. will make ice readily available this summer to residents of this city. S & S Vending Machine Company of California manufactured the equipment.

*Holyoke, Mass.*—Wayne Cutler of the Holyoke Ice Co. is installing a vending machine on one of the heavily traveled highways here.

*Worcester, Mass.*—Walker Coal & Ice Co. have ice available 24 hours per day through use of an S & S vending machine.

### New York

*Albany, N. Y.*—The Albany Packing Division of the Tobin Packing Co. Inc., has completed plans for additions to its West Albany plant which will cost more than one million dollars.

*Albany N. Y.*—City Products Corp. has completed installation of three additional ice venders to better serve the people here with blocks and packaged ice.

*Canadaigua, N. Y.* — Canandaigua Lake Ice Co. recently installed S & S automatic ice vending equipment.

*Schenectady, N. Y.* — Polar Ice & Cold Storage Co. has installed a processed ice vending machine. Equipment was manufactured by the S & S Vending Machine Co. of California.

### North Carolina

*North Wilkesboro, N. C.*—Construction has begun on a modern ice plant, near the site of the one destroyed by the city's $1,000,000 fire last April, by the North Wilkesboro Ice & Fuel Co., as announced by the owner Frank Blair.

### Oregon

*Enterprise, Ore.*—Mrs. Barbara Dutli and her son, Walt Dutli, have begun construction of a one-story cold storage plant on Main St. to replace the one destroyed by fire last January.

MODEL C-2
*Approved by Underwriters' Laboratories, Inc.*

## CONTROL ODORS AND MOLD

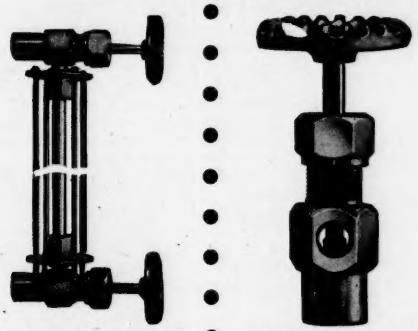
GENERAL OZONE *Air Clear* EQUIPMENT OFFERS ADEQUATE PROTECTION FROM MOLD AND ODORS

For nearly fifty years ozone has been used in cold storage plants to reduce odor and mold conditions.
Investigation by competent authorities have shown that no other device or method is superior to ozone for the control of these conditions.
General Ozone has a complete line of modern ozonizing equipment plus full repair service facilities for both old and new types. Write for further information.

**GENERAL OZONE CORPORATION**
1455 West Congress St., Chicago 7, Illinois
*Manufacturers of ozone generating equipment for cold storage ● warehouses refrigerated cars ● walk-in coolers ● air recirculating systems.*

## SHANK
**REFRIGERATION PRODUCTS**

*Provide maximum service under toughest operating conditions.*



**ALL-STEEL GAUGE SETS**
All-Steel Construction. Automatic shut-off of liquid in case of glass breakage. Composition packing rings give long life, no-leak seal.

**ALL-STEEL LINE VALVE**
Compact—Machined from bar stock steel—Full size ports — Completely rust-proofed — Highest grade graphited composition packing. All popular sizes.

See your jobber—or write us for prices.

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## INCREASE YOUR PROFIT
WITH REVOLUTIONARY NEW AUTOMATIC
## LOADER SHAKER SIZER

This new Bateman unit, incorporating revolutionary design that eliminates vibration on frame of shaker, assures added years of service and economy. One man can keep unit in operation, bagging and loading magazine.

Three sizer screens, running on roller bearing in counter-balancing action, operate without vibration. Screen openings, 1½", ¾" and ⅜". Shaker motor ½ H.P. Processes 175 lbs. of ice per minute.

Slow revolving drum, 12 large teeth, hold snow to absolute minimum. Removable plate on side of crusher so teeth can be changed easily and quickly. Five grate adjustments to help size ice before it reaches sizing screen.

LOW PRICE: Complete with motors, switches and galvanizing. F.O.B. Mineral Wells, Texas ..... **$1,295**

GALVANIZED AT NO EXTRA COST BY DUPONT BRIGHT ZINC ELECTRO PROCESS

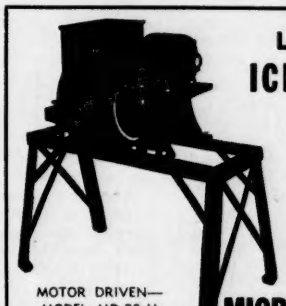
Write Today for More Information

**BATEMAN FOUNDRY & MACHINE CO., INC.**
MINERAL WELLS, TEXAS

INCREASE YOUR PROFITS
*Happy Says—*
YOUR PROFITS JUMP WITH—

"HAPPY" ICEMAN prefers
MASTER POINT ICE PICKS

**MASTER POINT ICE PICKS**
SOLD THRU THE NEW
**"TAKE-A-PICK" MASTER POINT PICK VENDOR**
WRITE OR WIRE
***HALSEY MFG. CO., Evansville 2, Ind.***



MOTOR DRIVEN—
MODEL MD-90-M
ADJUSTABLE GRATE

LITTLE GIANT
## ICE BREAKERS

- SAVE TIME
- SAVE LABOR
- SAVE ICE

12 MODELS TO CHOOSE FROM

*Write for descriptive circular*

**MICRON, INC., Dept. I**
BETTENDORF, IOWA

### Pennsylvania

*Pittsburgh, Pa.*—City Products Corp. has installed additional S & S packaged ice vending equipment.

### Vermont

*Brattleboro, Vt.*—Leon Whitman is installing two vending machines in his territory.

### Washington

*Seattle, Wash.*—To effect better ice service the Ice Delivery Co. has installed two additional S & S ice vending stations, Model 20-B. This now brings to 14 the number of 24-hour S & S ice vending depots serving the Seattle area.

*Yakima, Wash.*—Artificial Ice & Cold Storage Co. has installed another S & S ice vending depots serving the 20-A, equipped to dispense 25 and 50 lb. pieces of ice.

## Sales and Reorganizations

*Gadsden, Ala.* — Affiliation of the Lily Ice Cream Co. which operates six plants in Alabama and Georgia with the Borden Co. has been announced, The deal was confirmed by J. V. Liles, president of the Lily Co. The Lily Ice Cream Co. was formed in Gadsden in 1929 by Mr. Liles and his brother, the late L. B. Liles.

*Shreveport, La.*—The City Products Corp. has taken over the Jersey Gold Dairies of Shreveport, La., Wm. J. Sinek, president of City Products, has announced. Jersey Gold Dairies has operated in the Shreveport area for more than twenty years.

*Gulfport, Miss.* — Eddie Allbrook, owner of Allbrook Freezing and Cold Storage Plant here has sold one-seventh interest in the business to the following: F. G. Ross, H. R. Barber, M. Pete Hatten, V. A. Anderson, G. E. Estes and W. A. Davies. The sales as listed were made for a consideration of $100 plus, each.

*Silver City, N. Mex.*—J. F. Seal of this city has announced that he has leased the property of the Silver City Ice Co., the purchase of which by Fred H. Miller and Paul D. Hosman from the Community Public Service Co. was announced in the April '50 issue of ICE AND REFRIGERATION.

*Brooklyn, N. Y.* — Merit Packing Corp. has sold the meat packing plant at 120 N. 6th St. on a plot 25x100 ft. to Nibur Holding Co. Ltd. for a meat packing business. The property is assessed at $45,000.

*Konawa, Okla.*—The 18-ton ice plant equipment owned by the Home Ice Co., has been sold to the Durango Ice and Produce Co. and was moved to Durango, Colo. recently. The plant went into operation in July 1948 and closed in June, 1949.

*Pittsburgh, Pa.* — Stockholders of Consolidated Ice Co. have approved sale of the Consolidated Ice Co. to the City Products Corp. of Chicago, according to H. Stewart Dunn, president of Consolidated. The business will be operated as Consolidated Ice Division of City Products.

# DEATHS

## George W. Fraser

AFTER being confined by illness for the past several months, George W. Fraser, head of the Fraser Ice & Cold Storage Co. of Galveston, Tex. and of the Dixie Ice Co. of Corpus Christi and Robstown, died at his home in Galveston March 28. Mr. Fraser was a former mayor of the City of Galveston and for twenty-five years had been an active and loyal member of the Southwestern Ice Manufacturers Association.

He first operated a soft drink bottling plant. In 1925 he sold the soft drink business and purchased an ice manufacturing plant, the Fraser Ice & Cold Storage Co. He later built and operated two ice manufacturing plants at Corpus Christi although he continued to live in Galveston. He was a member of the Presbyterian Church and of the Galveston Masonic bodies including the Scottish Rite and the Shrine. He is survived by his widow, Mrs. Margarette Kell Fraser and three daughters, Mrs. E. L. Wall of Austin, Miss Margaretta Fraser and Mrs. Lorraine Fraser of Corpus Christi.

## George E. Willard

THE death of George E. Willard, owner of the Willard Ice Plant in Doylestown and Lambertville, N. J., occurred at his home on East State St., Doylestown, June 7. He was 61 years old. Mr. Willard was an authority on steam and electrical engineering and was a member of the Doylestown Borough Council for 16 years. He had operated the Willard ice plant since 1902. He is survived by his widow, Mrs. Ethel Mitchell Willard, and a son, Dr. Samuel C. Willard of Doylestown.

## Walter Dobbins

THE death of Walter Dobbins, president of the Textile Ice & Coal Co., Greenville, S. C., occurred recently at his home in Greenville. He was 66 years old. Mr. Dobbins was past president of the South Carolina Ice Association. He moved to Greenville in 1924 to enter the ice business. He is survived by his widow, Mrs. Alexandra Dobbins, two sons and five daughters.

ANDREW B. HARE, a native of Pittsburgh died May 15 in a Pittsburgh Hospital. He was 83 years old. Mr. Hare organized the Columbia Ice Co. in 1908 and for many years was an accountant for the Chautauqua Lake Ice Co. and later was secretary-treasurer of the Consolidated Ice Co. He is survived by his widow.

## Charles D. Haven

THE death of Charles D. Haven, formerly of Milwaukee and inventor of a double glazed window, died May 2 at Angola, Ind. Mr. Haven invented and developed the double glazed window known commercially as Thermopane, for use in insulated and air conditioned structures and in connection with refrigeration units. The manufacture and sale of Thermopane glass was purchased in 1934 by the Libbey-Owens-Ford Glass Co. of Toledo, Ohio, with whom Mr. Haven was associated as a designer.

He was a member of the American Society of Refrigerating Engineers, a 32nd degree Mason and a member of Tripoli Shrine in Milwaukee. Surviving are his widow, Mrs. Elfreda Haven, and two sons, Charles D. Jr., Whitefish Bay and Donald of Neenah, Wisconsin.

## Joseph M. Etienne

THE death of Joseph M. Etienne, president of the Cyclops Iron Works, San Francisco, Calif., occurred Saturday, June 3, at St. Luke's Hospital. He was 74 years old.

Mr. Etienne was active in the management of the machinery manufacturing concern up until the time of his death. They produced and installed an extensive line of refrigerating machinery and had specialized in refrigeration for wineries.

Active in Masonry, he was a member of the Islam Temple of the Shrine, California Bodies, A. & F. R., and Mount Moriah Lodge No. 44 A. F. & A. M. Surviving are the son, Raymond J. Etienne and a daughter, Mrs. Mabel E. Straub.

WILLIAM STUART GOODSON, owner and operator of the Reidsville Ice & Coal Co., Reidsville, N. C., died of a heart attack recently following a ball game at which he was a spectator. Mr. Goodson was active in the ice business for many years and was a past president of the North Carolina Ice Association and a former member of its executive board. He is survived by his widow, five brothers and two sisters.

F. L. MCCARTY of Des Moines, Iowa, sales manager of Manufacturers Sales and Service Co., representing F. B. Dickinson, vending machine manufacturers, died suddenly Wednesday, May 31, the result of a heart attack. Mr. McCarty will be greatly missed by his friends in the ice industry.

MICHAEL JOSEPH RIORDAN, branch manager for the Artesian Ice Co., St. Joseph, Mo., died of a heart attack May 3. He was 53 years old. Mr. Riordan had been an employee of the company for the past twenty-five years.

## DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*

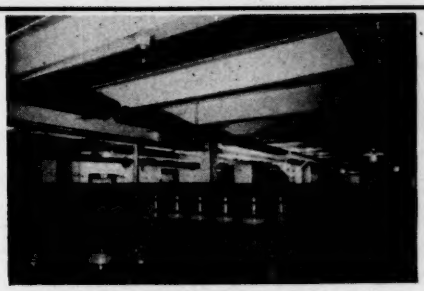
★ *Saves Weight*

★ *Saves Cost*

*CAN BE USED WITH ANY REFRIGERANT*
*SALES AGENCIES SOLICITED*

*Manufactured by*

**DETROIT ICE MACHINE COMPANY**
2615 Twelfth St., Detroit 16, Mich.



Keg Shipping Room — Pfeiffer Brewing Co., Detroit, Mich. Cellars throughout the brewery also equipped with DIMCO fin coils.

## THE INDEX LINE
### ICE DEALERS SUPPLIES

Only the Highest Quality Merchandise and efficient service necessary for the proper and profitable operation of your business. Write for our 1950 catalog.

**INDEX COUPON AND SUPPLY COMPANY**
**LA PORTE, INDIANA**

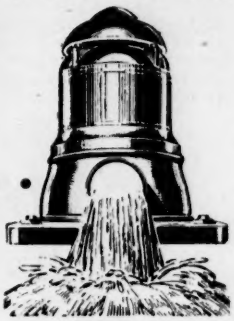
## CEMCO

**Double Gig Ice Hoist**
**Fast - Sturdy - Dependable -**

**Send for details**

**THE CAPITAL ELEVATOR & MFG. CO.**
424 W. Town St.
Columbus 8, Ohio

## LOWER COST OPERATION
### *Longer Life*



Layne well water systems are designed and built to produce much greater volumes of water than can be obtained from the conventional type of installation. Skillful designing and precision manufacture of the Layne Vertical Turbine pump used in these systems give extra high efficiency. The results are: more water—less cost and longer life for the unit. Furthermore, Layne well water systems are so ruggedly built that upkeep cost is almost nothing.

Thousands are now serving cities and industries throughout the world.

For further information on Layne Well Water Systems—or Layne Vertical Turbine Pumps, catalogs, etc., address

LAYNE & BOWLER, INC.
General Offices
Memphis 8, Tenn.

## LAYNE
## WELL WATER SYSTEMS

NOZZLES • DROP TUBES • CAN DOGS • CAN FILLERS • BLOWERS • BRACKETS • BAGS • HOISTS

• ICE CRUSHERS •

**GET THE BEST FOR YOUR MONEY**

**Use our precision-machined air agitation equipment and you will make the very best possible clear raw water ice.**

**For 15 years we have been serving the ice industry. Our dependable equipment gives satisfactory performance and keeps down operating costs. Conservative prices.**

**If you don't know us yet, investigate our facilities. If you already know us, send your order now for prompt shipment.**

*An* invitation

**Write Wire Phone**

**ICE PLANT EQUIPMENT CO., Inc.**
**2543 Frankford Ave. Philadelphia 25, Pa.**

• RUBBER TUBING •

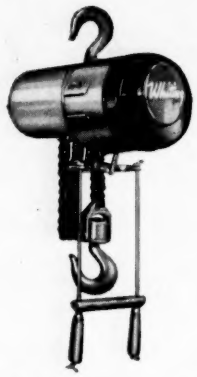
TUBE CLEANERS • PUMPS • FILTERS • VALVES • ICE TONGS • THERMOMETERS • ICE PICKS

# What's New

MACHINERY
APPLIANCES • PROCESSES

## Whiting Electric Hoists

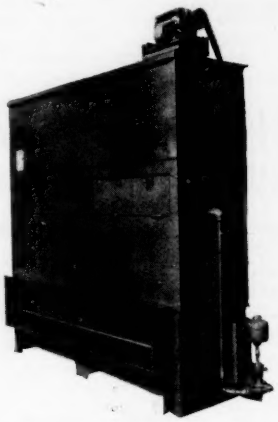
AN IMPROVED line of Whiting electric roller-chain hoists are being manufactured by the Whiting Corp., Harvey, Ill. The re-designed hoists retain the totally enclosed, double worm-gear drive of previous models. The hoists use a spring-set, shoe-type motor brake, in which the lining is bonded to the shoe. This arrangement is said to provide improved braking power and longer brake life. The pull cord has been relocated at the center, instead of the end, of the hoist frame, to eliminate any tendency of the hoist to tip when the control cord is pulled. These Whiting hoists are available in ¼, ½, 1 and 2-ton capacities.



*The Whiting electric roller-chain hoist.*

## New Aeropass Gas Condenser

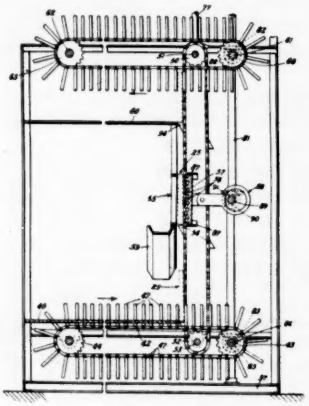
A NEW Aeropass refrigerant gas condenser is announced by the Niagara Blower Co. Designated as the 5800 series, the new condenser is designed especially for use where Freon is the refrigerant and for air conditioning and industrial refrigerating applications. The series consists of five standard units ranging in capacity from ten to fifty tons refrigeration at 105 F. Freon condensing temperature and 74 F. atmospheric wet bulb temperature. The smallest unit has casing dimensions of 31x24x85½ inches in height and the largest is 94x30x93¼ inches in height. Casing, fan and eliminator construction is galvanized steel. Condensing coils for Freon are copper tube, with copper fin or hot galvanized steel tube and fin. Weatherproof construction for outdor installation is available. The manufacturer is the Niagara Blower Company, 405 Lexington Ave., New York 17, N. Y.



*The new Aeropass refrigerant gas condenser*

## Prepared Ice Freezer

PATENT has been issued on apparatus for freezing small portions of ice and harvesting them mechanically. The inventor is George Pownall, Cincinnati, Ohio, owner of the Kolderol patents of which the present equipment apparently is a considerable refinement and development.



*Drawing of new Pownall ice-making apparatus.*

Pieces of ice are frozen in molds which then are thawed loose and discharged on the apron of a machine. A conveyor takes the molds to a point where a multi-prong ram forces the ice cubes or Kolderols out into a chute. The molds are then placed on an incline from which they are ready to slide back into the freezing cans for a repeated cycle.

Freezing is accomplished in standard ice freezing tanks but the partitioned cans employed are relatively thin. It is estimated that the ice will freeze in them in about three hours at 14 F brine. On this basis it has been estimated that three cans will freeze a ton of ice in 24 hours at this brine temperature.

The illustration shows the cross conveyor arms which take the molds to the elevator, the press plate or ram which removes the pieces of ice from the mold and the upper conveying system which places the molds in position to be slid back into thin compartments of the freezing cans.

## Comparator for Corrosion Control of Coolants

A NEW slide comparator has been developed by W. A. Taylor & Company, Baltimore, Md., for corrosion control in the cooling fluids of air conditioning systems, refrigerating brines, diesel engine cooling systems, condenser cooling water, etc. With a single slide comparator, it is possible to check the pH (active alkalinity) and the chromate content.

The comparator consists of a base and a slide, both molded from plastic. The base contains two vials of pH indicator solution with 0.5ml pipettes and 5-5ml test tubes. Each color standard slide contains five pH standards (cresol red pH 7.2, 7.6, 8.0, 8.4 and 8.8) and four chromate standards with values suitable for the application. For example, in air conditioning systems the values 300, 400, 500 and 600 parts per million of sodium chromate are usually employed. The value of each standard is engraved on the slide. The complete comparator is 10 in. long, 2⅛ in. wide, 4 in high and weighs only 1½ lbs.

To determine the pH of the cooling water, brine, etc., three test tubes are filled with the sample to the mark (5ml), and placed in the holes back of the three slots in the base. To the middle tube is added 0.5ml of pH indicator solution by means of a pipette, and the contents of the tube mixed well. The color standard slide is placed on the base and the pH section of the slide is moved in front of the test samples until a match is obtained. The pH is then read off directly from the values on the slide.

The chromate determination is made by placing a test tube full of sample in the base, and comparing directly with the chromate standards. The values are then read off directly from the values on the slide. All color standards carry an unlimited guarantee against fading.

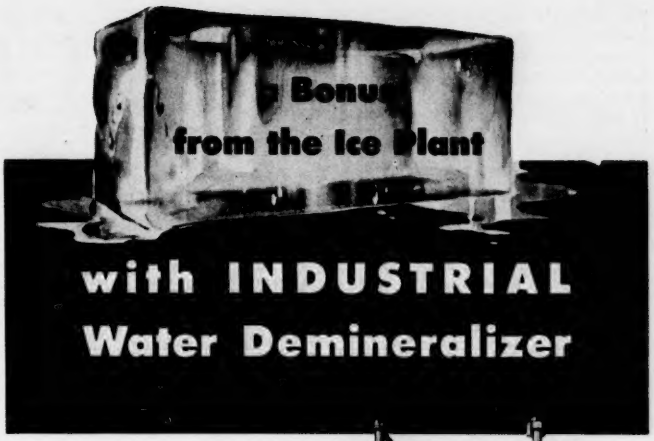
Further information may be obtained by writing W. A. Taylor & Co., 7300 York Road, Baltimore 4, Md.

## Special Gas Mask For Welders

TO protect welders on jobs where there are hazardous gases or smokes due to product residue or vaporization, Acme Protection Equipment Co., Chicago, has developed a special full vision gas mask, to be known as Pur-a-weld, that can be used interchangeably with dust and fume canister or a compressed-air supply unit.

*New Acme full-vision gas mask.*

Advantages of this new type equipment, it is stated, include greater vision than ever before available in welding helmets; lenses in shades from 4 to 12; complete gas mask protection to reduce headaches, fatigue and other health hazards; easy fit and comfort; free-breathing; replaceable welding hood; interchangeable air supply to meet different conditions.


*A typical two-bed Industrial Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.*

**Here's how it works...**

Instead of running ordinary city water into the freezing tanks, it is passed through the Industrial demineralizer where beds of ion-exchange resins remove the dissolved mineral salts—delivering the chemical equivalent of pure water.

With this pure water there are no minerals to deposit in the core—so the whole core-pulling operation is eliminated. Furthermore, the amount of ice which cracks in the cans is appreciably reduced. And the transparency of the whole cake is improved—your customers will notice the difference and like it.

It's easy to find out how to get this big bonus from your ice plant. Send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour). We will send you complete information on demineralized water, estimate of costs, performance data, etc. Better look into it right away.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSION TESTING APPARATUS Salt Fog • Humidity

**INDUSTRIAL FILTER & PUMP MFG. CO.**

1635 West Carroll Avenue
Chicago 12, Illinois

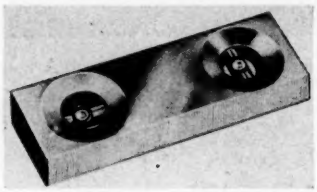
RUBBER DIVISION Vulcanized Linings • Molded Products · WATER DEMINERALIZERS

The complete outfit is furnished in a compact carrying case.

Complete information can be obtained from Acme Protection Equipment Co., 3037 West Lake Street, Chicago 12, Ill.

## New Cross Test Level

BACHARACH Industrial Instrument Company, 7000 Bennett St., Pittsburgh 8, Pa., is now manufacturing a cross test level for use in leveling condenser coil assemblies and on similar refrigeration installation and service jobs. The tool is compact, measuring 4 in. long x 1¼ in. wide



*New Bacharach cross test level.*

x ½ in. high. Its sensitivity is such that ½ degree out-of-level moves the bubbles ⅛ in. Its cross level design makes possible leveling in both directions without moving the tool. The level glasses are set in round openings with beveled rims to provide clear visibility from practically every angle. The block is aluminum with bottom surface carefully finished.

## Tube Expander

THE Knuth Engineering Co. of Chicago, is manufacturing Handy Expando, a tube and expander tool designed for use in the plumbing, heating and refrigeration field. It expands soft and hard copper, aluminum and steel tubes with a few turns of the Expando's handle. Working to a close tolerance, the tube is slipped onto the connecting tube, eliminating the need of a coupling sleeve. Present models come equipped with dies necessary for expansion of ⅜, ½, ⅝, and ¾ inch tubes one-eighth of an inch.

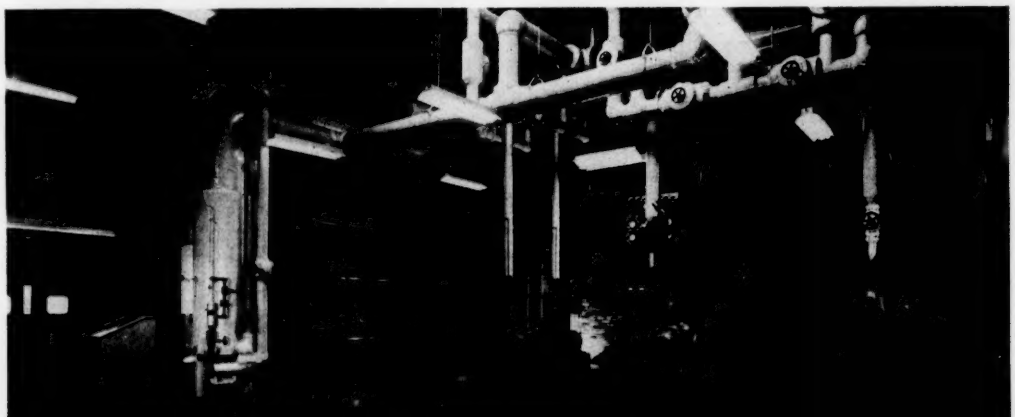
## Dry Ice Bunker Loads from Rear

AS AN aid to over-the-road refrigerated truck operators, Foster-Built Bunkers, Inc., Chicago, has developed a dry ice truck bunker with a rear loading feature. Designed to permit re-icing with dry ice without shifting a truck's load, the new bunker is said to be highly suited for vehicles on the highway for 50 hours or more at a stretch.

In most reefer truck operations employing Foster-Built bunkers, it is claimed, the original dry ice load will be sufficient, protecting the perishable merchandise for about 50 hours. For longer hauls, it was necessary to restyle the bunker in order that it could be refilled while the truck was in transit.

*Refiling a Foster-built bunker with dry ice.*

Holding four blocks of dry ice, the Foster-Built bunker effectively lowers the temperature within the truck interior; this is done by having a sirocco-type fan force air along the length of a two-inch bottom duct,

CONTINENTAL FREEZER, *Lafayette, Indiana*

(Featured on the Cover of this Issue)

BAKER EQUIPMENT

2 No. 12A BAKER COMPRESSORS
75 H.P. — Each with synchronous motor

2 No. F6B BAKER COMPRESSORS
15 H.P. — BELT DRIVEN

This installation was designed, sold and installed by BURGE ICE MACHINE CO., Chicago, Baker Distributors

BAKER REFRIGERATION CORPORATION • *General Offices and Factory: South Windham, Maine*

# LILLY

## ICE SIZERS

**ICIZERS**

**CRUSHERS**

Sized ice sales continue to increase in volume and profit.

Lilly Ice Sizing equipment continues to lead the way to more economical production.

The performance-ability of Lilly ICIZERS is a proven fact—known to progressive ice men throughout the country.

Plan—NOW—to boost your profits with sized ice.

*Write for*
*ICIZER*
*Catalog #300*

## ICE SUPPLIES

**PICKS & TONGS**

**PLANT & DELIVERY SUPPLIES**

First quality supplies play an important part in reducing the cost of production and delivery of your ice. Loss of time and sales caused by the use of makeshift equipment can ruin the profit column.

You can always depend on top quality equipment from LILLY.

ORDER NOW—Paper Bags—Tongs and other plant and delivery supplies. Your orders will receive our prompt attention.

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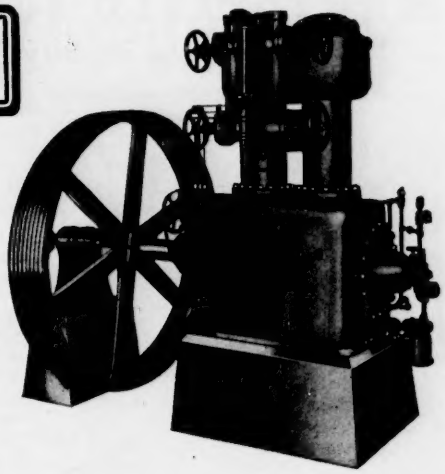
*ICE TOOLS & SUPPLIES*
*Catalog #101*

THE LILLY COMPANY
466 Union Avenue, Memphis 1, Tenn.

# Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, current—most models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

## REYNOLDS MANUFACTURING CO.

SPRINGFIELD *"Builders of Fine Refrigeration Equipment"* MISSOURI

the air losing its heat from contact with the chilled top of the duct.

Since the unit is mounted at the rear of the truck, with the fan pushing the air out toward the front, refilling could be done formerly only by getting inside the vehicle and loading from the end opposite the fan. Now, however, the fan has been mounted on a hinged panel that opens up for rear loading.

Weighing only 52 lbs., the new bunker is ideal for weight-conscious truckers. It measures 57 inches in length, with a width of 13 inches and height of 16 inches. Power for the six-volt fan is supplied by the truck's ignition system. Low cost and simple to install, the unit requires only the placing of two studs in the wall and two in the ceiling of the truck.

# MANUFACTURERS' NEWS

## New Distributor for Rotary Compressors

NATIONAL distribution of the rotary compressors for refrigeration manufactured by the Fuller Company, Catasauqua, Pa., has been taken over by Freezing Equipment Sales, Inc., 417 W. Market St., York, Pa., according to Henry B. Pownall, president of Freezing Equipment Sales.

A completely redesigned line of rotary compressors for refrigeration will be announced shortly, based on compressor designs by Fuller and engineering for refrigeration use by Freezing Equipment Sales. The new distributor has successfully installed these compressors in dairy and frozen food plants along the East Coast.

A nationwide distributor organization is planned by Freezing Equipment Sales on this line of rotaries. The largest rotary in the line is claimed equivalent to 15 per cent more displacement than a 15 x 10 4-cylinder reciprocating compressor operating at top speed.

Two of the outstanding features of this new line of rotary compressors are the space saving factors which enable engineers to install additional refrigeration capacity in an already crowded machine room and cost savings both in original and operating costs, according to Mr. Pownall.


**MARTOCELLO ICE PICKS**

***"Cost You Less To Buy The Best"***

**Immediate Delivery on Plain Handle Ice Picks**

**BLADES**

**of High Carbon Tool Steel, accurately tempered to give you maximum use.**

**HANDLES**

**of Sound, Clear Hard Wood with Protective Flexible Lacquer Coating.**

**FERRULES**

**of Pressed Steel securely registered on Handle and Plated to Resist Corrosion.**

***PRICES ON PLAIN AND PRINTED HANDLES HAVE BEEN REDUCED! WRITE TODAY FOR NEW PRICES.***

**Jos. A. Martocello & Co.** 229-231 NORTH 13th STREET PHILADELPHIA 7, PA.

*"Serving the Ice Industry Since 1916"* ... *"There is no Substitute for* MARTOCELLO QUALITY"


## Max A. Myers Heads Reco Sales

RECO Products Division of Refrigeration Engineering Corporation, Philadelphia, Pa. has appointed Max A. Myers as sales manager over all domestic sales. Mr. Myers will con-

*Max A. Myers*

centrate his activities initially in setting up a nationwide distribution system for the company's new Frosti-Stik Freezers for manufacturing frozen confections, and in distribution of Reco-Fab Frosti-Vaults, the firm's prefabricated, sectional walk-ins and reach-ins.

## Vilter Appoints Fullerton New District Manager

THE appointment of Wallace W. Fullerton to its Philadelphia Office as district manager to supervise the territory in direct and distributor sales of the company's line of refrigeration and air conditioning equipment has been announced by the Vilter Manufacturing Co., Milwaukee, Wis.

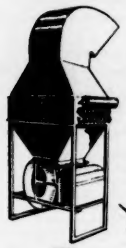
Mr. Fullerton has been active in the eastern states in dairy, frozen foods, brewing and cold storage industry refrigeration sales since 1931 and brings a wealth of experience to the Philadelphia area. He spent four and a half years in Australia prior to the recent war, setting up a refrigeration distributorship while the Japs were moving in on the islands in the neighborhood.

# CATALOGS AND BULLETINS

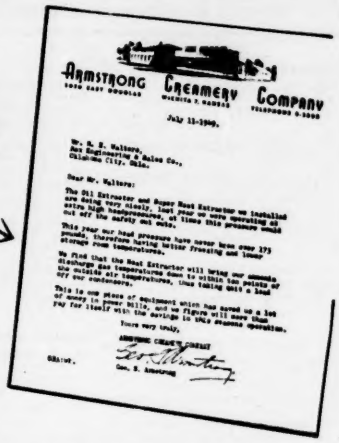
## Ice Equipment Bulletins

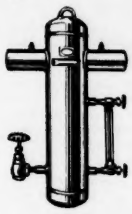
A BULLETIN on quality ice tools has been issued as a supplement to Bulletin 480 by Gifford-Wood Co., Hudson, N. Y. Tongs, saws, axes, ice shavers and other tools are listed and described. Prices are included. A leaflet on equipment for the ice industry, illustrating ice tiering machines, elevators, ice conveyors and hoist unit invites those interested to send for Bulletin 104.

# BETTER FREEZING—
## LOWER STORAGE ROOM TEMPERATURE



REX
Super-Heat Extractor



REX
Oil Extractor

You can effect the same savings made by Armstrong Creamery Co. and many others, by installing Rex Equipment. Write today for full details.

**ENGINEERING & SALES CO.** REX
Dept. IR Oklahoma City, Oklahoma
BOX 5141

**Height: 31" — with stand 66". Width 9¼" — Depth 5¼". Shipping Weight — Machine: 24 lbs.; Stand 24 lbs.**

| | 10c mech | 15c mech. |
|---|---|---|
| 1 only | 39.50 ea. | 44.50 ea. |
| 2-9 | 37.00 ea. | 42.00 ea. |
| 10 & up | 33.00 ea. | 38.00 ea. |
| Stand Extra | 15.00 ea. | |

All prices f.o.b. our factory

## PICKWELL ICE PICK VENDOR

**Convenient Self Service Any Location**

**10c or 15c Vending**

Made by the manufacturer of the nationally known BEN SPECIAL Ice Pick. Holds 21 fully assembled Ice Picks equipped with rust preventive, safety straws. Precision engineered for unfailing service. 10c Anti-slug mechanism. Electrically welded steel body for all weather operation. Exclusive quick action non-jamming PATENTED delivery. Weather resistant baked two-tone finish. Chrome plated mechanism. FULLY GUARANTEED. Double lock panel door. Separate lock for coin box.

*Distributors Wanted*

**UNITED ICE SUPPLY CO.**
**55 BEVERLY ST., BOSTON 14, MASS.**

**FRED OPHULS & ASSOCIATES,**
*Consulting Engineers*
112-114 WEST 42nd ST. NEW YORK CITY 18
**Ice Making and Refrigeration - Industrial Power Plants**
**Reports, Appraisals and Management**

**VAN RENSSELAER H. GREENE**
**ENGINEERS**
COMPLETE PLANT DESIGNS INCLUDING
BUILDING AND EQUIPMENT
**11 PARK PLACE** **NEW YORK 7, N.Y.**

VIVIAN SERV-ICE TRADE MARK REG U.S PAT.OFF. Products
ICE TOOLS AND SUPPLIES

**WE CONTINUE YEAR AFTER YEAR**
to make the kind of Ice Picks that will give YOUR customers satisfaction and build up GOOD WILL FOR YOU.

PRICE UPON REQUEST

**VIVIAN MANUFACTURINGCO.** 4132-38 Folsom Ave., St. Louis 10, Mo.

BRINE AGITATORS

ICE CAN FILLER

**PLAN NOW FOR YOUR FALL REQUIREMENT**

- Tank Framing and Covers
- Raceway and Storage Room Coils
- Receivers and Surge Drums

**Plus many other components Estimates cheerfully furnished by our Engineering Dept., write**

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RECO PRODUCTS DIVISION RECO
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ICE CAN DUMPERS

YOU'LL.....
SEE BETTER...
BREATH EASIER
BE SAFER....
FEEL BETTER
AND
WORK BETTER

*With the* **ACME** *Full-Vision*
**GAS MASK**

Get the complete facts today and see how much MORE Acme offers you against hazards in refrigeration service.

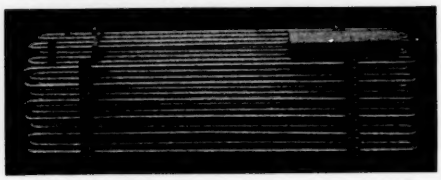
**ACME** PROTECTION EQUIP. CO.

3037 WEST LAKE STREET, CHICAGO 12, ILLINOIS

**QUALITY COILS FOR *ALL* APPLICATIONS**

**WELDED HEADERS, PIPE BENDS AND AMMONIA RECEIVERS**

Whether your next job be for a single bend, or coil or complete piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.



Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

SEND DRAWING OR BLUE PRINT FOR QUOTATION

**CHICAGO NIPPLE MFG. CO.**
1997 Clybourn Ave., Chicago 14, Ill.

# THE BUYERS

INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

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Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

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Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

**AIR COMPRESSORS**
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.

**AIR CONDITIONING EQUIPMENT**
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc. Los Angeles, Calif.

**AIR PURIFYING EQUIPMENT**
General Ozone Corp., Chicago, Ill.

**AMMONIA COMPRESSOR VALVES**
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Voss, Inc., J. H. H., New York, N.Y.

**AMMONIA COMPRESSORS**
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Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. F., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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**AMMONIA FLOAT VALVES**
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Phillips & Co., H. A., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Bower Chemical Mfg. Co., Henry, Philadelphia, Pa.
du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington, Del.

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Ice Plant Equipment Co., Inc., Philadelphia, Pa.

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Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. F., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Pittsburgh Pipe Coil & Bending Co., Rempe Company, Chicago, Ill.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Shank Co., Cyrus, Chicago, Ill.

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Ophuls & Associates, Fred, New York, N. Y.

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Armstrong Machine Works, Three Rivers, Mich.
Baker Refrigeration Corp., So. Windham, Maine
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.
York Corp., York, Pa.

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Index Coupon & Supply Co., La Porte, In.
International Paper Co., New York, N. Y.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

**BAGS, WATERPROOF PAPER**
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International Paper Co., New York, N. Y.
Union Bag & Paper Co., New York, N. Y.

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Vogt Machine Co., Henry, Louisville, Ky.

**BLOWERS**
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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Lamson Corp., Syracuse, N. Y.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

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Vogt Machine Co., Henry, Louisville, Ky.

**BOILER TUBES**
Byers Co., A. M., Pittsburgh, Pa.

**BOOKS—TECHNICAL**
Nickerson & Collins Co., Chicago, Ill.

**BRINE CIRCULATORS**
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

BUYERS DIRECTORY CONTINUED—NEXT PAGE

# DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

Mortocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ky.
York Corp., York, Pa.

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Acme Industries, Inc., Jackson, Mich.
Baker Refrigeration Corp., So. Windham, Maine
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Mortocello & Co., Jos. A., Philadelphia, Pa.

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Chemical Solvent Co., Birmingham, Ala.

**CALCIUM CHLORIDE**
Solvay Sales Div., Allied Chemical & Dye Corp., New York, N. Y.

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Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipmest Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Mortocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Gifford-Wood Co., Hudson, N. Y.
The Lilly Co., Memphis, Tenn.
Link-Belt Co., Chicago, Ill.

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Byers Co., A. M., Pittsburgh, Pa.
Chicago Nipple Mfg. Co., Chicago, Ill.
Creamery Package Mfg. Co., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Howe Ice Machine Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
York Corp., York, Pa.

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Frick Co., Waynesboro, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

**COLD STORAGE DOORS**
Butcher Boy Cold Storage Door Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Stge. Door Co., Hagerstown, Md.
Refrigeration Engineer Co., Minneapolis, Minn.

**COMPRESSOR VALVE PLATES & DISCS**
Voss, Inc., J. H. H., New York, N. Y.

**COMPRESSORS**
(See Ice Making and Refrigerating Machinery)
(See Air Compressors)

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Acme Industries, Inc., Jackson, Mich.
Baker Refrigeration Corp., So. Windham, Maine
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Uauert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Ophuls & Associates, Fred, New York, N. Y.

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Gifford-Wood Co., Hudson, N. Y.
Lilly Co., The, Memphis, Tenn.
Link-Belt Co., Chicago, Ill.

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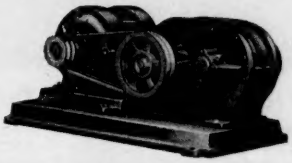
Mortocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BUYERS DIRECTORY CONTINUED—NEXT PAGE

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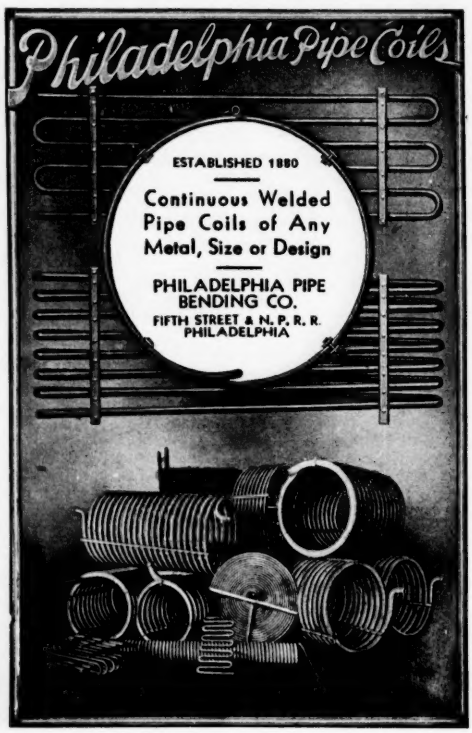
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INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

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Frick Company, Waynesboro, Pa.
Link-Belt Co., Chicago, Ill.

**ELEVATING & CONVEYING MACHINERY**
Capital Elevator & Mfg. Co., Columbus, Ohio
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The Lilly Co., Memphis, Tenn.
Link-Belt Co., Chicago, Ill.

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(See Architects and Engineers)

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Refrigeration Engineering, Inc., Los Angeles, Calif.

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Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.
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York Corp., York, Pa.

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**FIN COILS**
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Howe Ice Machine Co., Chicago, Ill.
Rempe Company, Chicago, Ill.
York Corp., York, Pa.

**FIRST AID SUPPLIES**
Acme Protection Equipment Co., Chicago, Ill.

**FITTINGS**
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

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Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

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Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

**FUEL OIL PRE-HEATERS**
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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
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Vogt Machine Co., Henry, Louisville, Ky.

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Refrigeration Engineering Corp., Philadelphia, Pa.

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Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BUYERS DIRECTORY CONTINUED—NEXT PAGE

# DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

### ICE CRUSHERS
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
The Lilly Co., Memphis, Tenn.
Link-Belt Co., Chicago, Ill.
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Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
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International Paper Co., New York, N. Y.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
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Vivian Mfg. Co., St. Louis, Mo.

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Gifford-Wood Co., Hudson, N. Y.
Link-Belt Co., Chicago, Ill.

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Enterprise Equipment Corp., Yonkers, N. Y.
Frick Company, Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Martocello & Co., Jos. A., Philadelphia, Pa.
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Refrigeration Engineering Corp., Philadelphia, Pa.

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United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

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Armstrong Cork Co., Lancaster, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
Pacific Lumber Co., San Francisco, Calif.

**LOW TEMPERATURE EQUIPMENT**
(See Ice Making and Refrigerating Machinery)

**MASKS, AMMONIA**
Acme Protection Equipment Co., Chicago, Ill.

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The Moto-Truc Co., Cleveland, Ohio

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Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

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Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

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Rex Engineering & Sales Co., Oklahoma City, Okla.

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Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

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Vivian Mfg. Co., St. Louis, Mo.
York Corp., Pa.

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Frick Company, Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**PIPE COVERING**
(See Coverings, Pipe and Boiler)

**PIPE WELDING**
Acme Industries, Inc., Jackson, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

**PIPING**
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Frick Company, Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

**PRESSURE BLOWERS**
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

**PROPELLERS**
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

**PUMPING MACHINERY**
Aurora Pump Co., Aurora, Ill.
Deming Co., The, Salem, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

**PUMPING MACHINERY—AIR LIFT**
Deming Co., The Salem, Ohio
Martocello & Co., Jos. A., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

**PUMPS, AMMONIA AND BRINE**
Baker Refrigeration Corp., So. Windham, Maine
Deming Co., The, Salem, Ohio
Frick Company, Waynesboro, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Layne & Bowler, Inc., Memphis, Tenn.

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Aurora Pump Company, Aurora, Ill.
Deming Co., The, Salem, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa,
Roots-Connersville Blower Corp., Connersville, Ind.

**PURGERS**
Armstrong Machine Works, Three Rivers, Mich.
Frick Company, Waynesboro, Pa.
Rex Engineering & Sales Co., Oklahoma City, Okla.
York Corp., York, Pa.

**RAW WATER FREEZING SYSTEMS**
Frick Co., Waynesboro, Pa.
Ice Plant quipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**REBOILERS**
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**REFRIGERATED ICE STATIONS**
Dickinson & Co., F. B., Des Moines, Ia.
Refrigeration Engineering Co., Minneapolis, Minn.
S & S Vending Machine Co., San Jose, Calif.
Towal Mfg. Co. Inc., Marion, Ill.

BUYERS DIRECTORY CONTINUED—NEXT PAGE

# DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS—PAGE 88

**REFRIGERATING AND ICE MAKING MACHINERY**
(See Ice Making and Refrigerating Machinery)

**RESPIRATORS**
Acme Protection Equipment Co., Chicago, Ill.

**RUST PREVENTIVES**
Bower Chemical Mfg. Co., Henry, Philadelphia, Pa.

**SCORING MACHINES**
Frick Company, Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
The Lilly Co., Memphis, Tenn.
Perfection Ice Scoring Machine Co., Fort Worth, Texas
United Ice & Oil Supply Co., Boston, Mass.

**SECOND HAND MACHINERY AND SUPPLIES**
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
United Ice & Oil Supply Co., Boston, Mass.

**SEPARATORS OIL, STEAM AND AMMONIA**
Acme Industries, Inc., Jackson, Mich.
Frick Company, Waynesboro, Pa.
King-Zeero Company, Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**SHOULDER PADS**
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

**SIZED ICE EQUIPMENT**
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
The Lilly Co., Memphis, Tenn.
Vivian Mfg. Co., St. Louis, Mo.

**SPRAY NOZZLES**
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

**SPRAY PONDS**
Frick Company, Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
York Corp., York, Pa.

**STORAGE HEATERS**
National Pipe Bending Co., New Haven, Conn.

**STRAINERS**
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.

**TANKS**
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**TARPAULINS**
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

**THERMOMETERS**
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

**TIERING MACHINES**
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

**TRAPS, OIL & STEAM**
Armstrong Machine Works, Three Rivers, Mich.

**TRUCKS, MOTORIZED LIFT**
The Moto-Truc Co., Cleveland, Ohio

**UNIT COOLERS**
Acme Industries, Inc., Jackson, Mich.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.

**USED MACHINERY**
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

**VALVES AND FITTINGS**
Alco Valve Co., St. Louis, Mo.
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Martocello & Co., Jos. A., Philadelphia, Pa.
Phillips & Co., H. A., Chicago, Ill.
Refrigeration Engineering Corp., Philadelphia, Pa.
Rempe Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

**VALVES, COMPRESSOR**
Voss, Inc., J. H., New York, N. Y.

**WATER COOLERS**
Acme Industries, Inc., Jackson, Mich.
Niagara Blower Co., New York, N.Y.

**WATER SUPPLY CONTRACTORS**
Yayne & Bowler, Inc., Memphis, Tenn.

**WATER TREATMENT MATERIALS**
Baroda & Page, Inc., Kansas City, Mo.
Chemical Solvent Co., Birmingham, Ala.
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

**WELDING**
Frick Company, Waynesboro, Pa.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

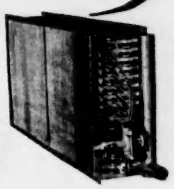
**WELL SCREENS**
Layne & Bowler, Inc., Memphis, Tenn.

**WROUGHT IRON PIPE**
Byers Co., A. M., Pittsburgh, Pa.

BUYERS DIRECTORY CONTINUED—NEXT PAGE


**REMPE**

**Pipe Coils**
**Fin Coils**
***For* Refrigeration, Air Conditioning, Heating**



Coils and Bends of any Metal, Size or Design. Engineered to your requirements. Designed and Built for longest life and the least maintenance.

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REMPE CO. — HEAT TRANSFER EQUIPMENT

**REMPE COMPANY**
348 N. Sacramento Blvd., Chicago 12, Illinois

**KEEP IN TOUCH WITH**

**MODERN REFRIGERATION**

This official organ of the British Refrigerating Industry incorporates the two original British Journals *"Cold Storage & Produce Review"* and *"Ice & Cold Storage"*. Now in its 52nd year. *"M.R."* gives the latest reliable technical and practical information.

Subscription, post free..... $3.00 a year

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**MODERN REFRIGERATION, Empire House, St. Martin's-le-Grand, London E.C.1., England.**


## *Classified Advertising*

### POSITIONS AND HELP WANTED

WANTED—Salesman calling on the Ice Plant trade on the West Coast and Mid-Western states to take on a side line of ice picks, blades and ice pick vending machines. United Ice Supply Co., 55 Beverly St., Boston 14, Mass.

WANTED—Staff Refrigeration Engineer for large well established West Coast firm. Mechanical or chemical engineering degree and minimum of five years refrigeration experience required. Age limit 45. Salary open. Write details including work history with names of companies and immediate supervisors, salaries received, educational background, other pertinent data. Replies held in strictest confidence. Write Box JL-2, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

POSITION WANTED—As chief engineer of a group of plants with large firm. Capable of handling the supervision of all maintenance, emergency repairs, insulating, remodeling, erecting, etc., keeping plants in best of operating condition and producing peak capacity. Ice or refrigeration. Capable of keeping cost of operating, repairs and labor at minimum. Gold seal refrigeration engineers license, 11 years. Member N.A.P.R.E. Have served as chief engineer of 5 plants for 5 years covering quick freezing, all storage temperatures and the mfg. of ice to 220 tons. Sober. Can more than satisfy any company desiring engineer in this capacity. Best references. Address Box JL-14, Ice and Refrigeration, 435 No. Waller Ave., Chicago 44, Ill.

**Classified Advertising continued next page**

# Classified Advertising

**All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for the purchase and sale of USED equipment, existing and used plants, and surplus material or equipment.**

**RATES: $3.50 for 50 words or less; 60c for each additional 10 words or fraction thereof; 75c per line for bold face headings; $6.00 per inch on three column page ($9.00 per inch on two column page) for ads all set in bold face type or listing items on separate lines.**

## ICE PLANTS—wanted & for sale

FOR SALE—100 ton ice plant; machinery and complete equipment with scoring and cubing machines. Good operating condition. Inspection invited. Metropolitan Utilities District, Utilities Bldg., Omaha 2, Nebr.

**FOR SALE—ONE HORIZONTAL MOTOR DRIVEN 20 TON VILTER PLANT**

238—400 lb. cans, 11½"x22½"x57". Entire plant installed new in 1921. S. L. Young & Sons, 405 N. Franklin, Austin, Minnesota.

FOR SALE—Complete 27 ton York ice plant to be moved; can be seen in operation until September 1950; equipment in excellent condition, includes float control, 324 ice cans, one 8x8 compressor, one 6x6 compressor, new scoring machine. Price $6000.00. Murphysboro Ice & Cold Storage Co., Murphysboro, Ill.

FOR SALE—at sacrifice—two 30 ton York ice plants; just shut down; everything in excellent condition. Must vacate building. For further information, please write or wire Box 642, Central Y.M.C.A., Reed & Washington Sts., Reading, Pa.

FOR SALE—224 can York ice plant, electric with double hoist and filler, six trucks, large storage, scoring machine and sizer. Shoe repair shop to get you through the winter. Property located on very valuable lot. Property and equipment appraised at $64,865.00; will take $55,000.00 cash. Inspection invited. Steel Ice Co., Jackson, Mississippi.

**FOR SALE—30 TON ICE PLANT**

This plant, in excellent condition, includes the following: Ice tank and auxiliary equipment, ice tank 16 cans wide by 24 cans long, 400—48"x11"x22" ice cans, Frick "Vertiflow" ice tank coil containing 1221 sq. ft. cooling surface complete with accumulator and float valve; all ice cans in four can grids; oak tank covers; Frick F. PR low pressure air system; 5 h.p. vertical agitator; centrifugal type air blower; one ton electric ice tank hoist and crane; Frick core sucking set; Knickerbocker 4 can, can filler; Frick hydraulic four can dump. High Side equipment including Frick 60 ton M S horizontal shell & tube condenser, 30 ton Frick vertical shell & tube condenser, receiver and oil traps. Compressors including Frick 8x8 with flexible coupling, Frick 7x7 with 50 h.p. motor, Frick 5¾x4 booster with 7½ h.p. motor. Will sell as a unit or in parts. Address The Ohio Valley Baking Company, Middleport, Ohio.

## USED MACHINERY—wanted & for sale

WANTED—New or used small ice making equipment (complete). Am interested only in 3 to 5 ton job. Grand Rapids Ice Co., Grand Rapids, Minnesota.

FOR SALE—Two S and S Vending Machines three deck complete. These machines are new; they have not been uncrated. Will sell at a discount. Contact The Peoples Ice & Supply Company, 411 Delaware N.W., Warren, Ohio.

FOR SALE—York and Arctic 9x9 compressors, York 5x5, Frick 6x6, Baker 4½x5. Small Lipman units, 288 Arctic Pownall ice cans; shell and tube condenser and brine cooler; ammonia receivers; 5 h.p. vertical agitator; 3 h.p. Hoffman blower; coils, fittings; 150 and 180 h.p. oil engines; generators, motors. Parke Pettegrew & Son Co., 370 W. Broad St., Columbus 8, Ohio.

FOR SALE—Cake ice field; mfg. by York Corp.; cap. 96-120 lb. cakes, size 8"x16"x12"—total 6 tons per day; complete with steel tank, wooden top with lids; vertical agitator with motor; coils; 110 ice cans (14 brand new and others in very good condition); can filler; dumping device. This equipment in good operating condition. Will sell in part or the whole. Martin Century Farms, Inc., Lansdale, Penna.

FOR SALE—One 6½"x5" V/W York ammonia booster compressor 8 cylinder V-belt drive complete with base, including 440 volt A.C. motor and 36"x 12' long D.E. gas and liquor cooler plus valves. This equipment is new and has never been installed. If interested contact W. A. Moore, General Manager, New Orleans Cold Storage & Warehouse Co. Ltd., 305 Gaiennie St., New Orleans, La.

FOR SALE—Locomotive type boiler, Broderick 1925, certi. March 1950, 60 h.p. Available immediately with stack and auto. controls. Consider any reasonable offer. San Joaquin Cold Storage Company, Lincoln & West Weber Aves., Stockton, Calif.

## USED MACHINERY—continued

FOR SALE—Frick 10x10 No. 27053 forced feed lubrication, suction line strainer, two piece fly wheel, $750.00; York 9x9 No. 5563 with oil circulating pump, $700.00; Vilter 7½x7½ $500.00; other smaller compressors, fittings, valves, etc. Write us your requirements. Gordon Equipment Co., 6530 W. Jefferson Ave., Detroit 17, Mich.

FOR SALE—One 10 h.p. Frick Freon condensing unit. Six Freon suspended type Acme blowers. Two 3x3 Frick and one 4x4 York self-contained units. 3x3, 4x4, 5x5, 6x6, 7½x7½, 8x8 and 9x9 York splash lubrication compressors. One 2 h.p. vertical agitator. Four 3" flanged angle valves. Write E. Niebling, 1546 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

**BARGAIN SALE**

6,800 cu. ft. fibre glass refrigerated warehouse in six compartments with six independent 3 tons Carrier machines. 2 York ice plants 72 ice blocks (100 lbs. each) per 24 hours, 5x5 compressors, blowers, condensers; everything like new, 2 years operating. Tenant sold building and business must move. All or independent units can be shipped anywhere cheap from port of Mayaguez, Puerto Rico. We invite inquiries or inspection. All offers will be considered no matter how small. Puerto Rico Provision Company, P.O. Box 666, Mayaguez, Puerto Rico.

**FOR SALE—ICE PLANTS AND EQUIPMENT**

1—30 ton York ice making plant, trunk coil, 4 can pull electric driven.
1—25 ton York ice making plant, brine coolers, electric driven.
1—12 ton York ice making plant, trunk coil electric driven.
2—10x10 Frick ammonia compressors, direct connected to synchronous motor.
1—10x10 York ammonia compressor, late type 360 r.p.m.
1—10x10 York ammonia compressor 250 r.p.m.
1—9x9 York ammonia compressor 250 r.p.m.
1—9x9 York ammonia compressor 200 r.p.m.
1—8x8 Frick ammonia compressor, late type with capacity control valves.
1—8x8 Frick ammonia compressor 277 r.p.m.
1—7x7 Worthington 400 r.p.m.
2—6½x6½ York high speed ammonia compressors, late type.
1—6x6 York 300 r.p.m.
1—5x5 York late style self contained unit.
Assorted brine coolers and condensers ASME coded vessels, like new.

**B & E REFRIGERATING CO.**
2 Orange St., Newark 2, N. J.
Phone: Mitchell 3-7790 Cable Address "BERECO"

**FOR SALE—90 TON ICE PLANT EQUIPMENT**

1400—300# ice cans 11"x22"x50" 14 Ga., galv.
2—Ice tanks, 69'-6"x25'-4"x4'-9".
118—12-can baskets for above cans.
1—Can filling tank, for 12-can baskets, new 1948
1—Rotary dump, 12-can basket, rebuilt like new 1947
1—Ice dump slat conveyor, double chain, 15'-3" shaft centers
2—Storage room conveyors, steel slats, 62' and 69' shaft centers
1—Feeding conveyor, for type Uline 050 scoring machine.
1—Uline scoring machine, 300#—11"x22"x48" blocks.
4—Brine agitators, Dimco 300#, style B, new 1948
4—Brine coolers, 38"x12'
2—Air compressors, Nash Hytor, size 962, 202 cu. ft. per min.
2—Dimco HP air systems, each for 24 can wide, 29 can long tank.
1—Monorail hoist transfer crane, span 12'-9", with underslung I-beam, to line up with stationary track, 3½ h.p. motor
2—Special Monorail trolley hoists, with trolley combined, each hoist to handle 12—300# ice cans, 5 h.p. motors
1—Lily ice crusher, 22 CE 11 Icizer, left hand, 4 bins, new 1947
1—Lily ferder for crusher, type H, for 300# block, new 1947
1—Motor-Generator set, 5KW, 125 V., 24 amps, 1260-1400 r.p.m., new 1946

All above and many other ice plant items in good condition and in daily operation until April 1949. Sell complete or separate items, priced for quick disposal.

**HENRY COAL & ICE CO., (Owners)**
**BARBERTON, OHIO**

## USED MACHINERY—continued

# FOR SALE

***A Complete 480 Ton REFRIGERATION UNIT consisting of:***

**2—De Lavergne Horizontal Duplex 12 x 15 Ammonia Compressors — each directly connected to a 250 HP, GE synchronous 3/60/550/200 RPM motor, Unity Power factor.**

**With these compressors there is a horizontal multi-pass type ammonia condenser, 4 Frick Zig Zag Coolers, complete with accumulators, by-passes, inter-connecting piping, shell and tube brine coolers, motor driven water and brine pumps, control panels, etc., etc.**

**Will sell as 2 separate units.**

**UNITS SET UP EXACTLY AS OPERATED.**

**Also carrier and Sturtevant Ranging AIR CONDITIONING UNITS from 5000 to 70,000 CFM. complete with fans, pumps, motors and automatic controls.**

**CONSOLIDATED PRODUCTS Co., Inc.**

**Box 70** **Woonsocket, R. I.**

**FOR SALE—ICE PLANTS & EQUIPMENT**

**30- 40- 50 Ton Ice Plants**

1—10"x10" York ammonia compressor direct connected to a 60 H.P. synchronous motor 200 R.P.M.
1—10"x10" York ammonia compressor direct connected to 100 H.P. synchronous motor 200 R.P.M.
1—9"x9" York ammonia compressor direct connected to 50 H.P. synchronous motor 200 R.P.M.
1—10"x10" York ammonia compressor 200 R.P.M.
2—9"x9" York ammonia compressors 200 R.P.M.
1—Duplex 10"x10" Carbondale High speed Compressor direct connected to 250 H.P. synchronous motor.
1—6½x6½ York ammonia compressor high speed with or without motor.
1—6"x6" York ammonia compressor high speed.
1—6"x6" Voss ammonia compressor.
2—4"x4" York H.S. Self Contained units.
1—3"x3" Frick H.S. Self Contained unit.
Shell and tube vertical condensers 36"x14"—162—2" tubes.
2—16" dia. x 10'-0 long 6 pass enclosed type ammonia condensers.
1—25" dia. x 10'-0 long 5 pass enclosed type ammonia condenser.
Assorted sizes electric hoists ranging from 2 to 6 ton capacity.
1—Gifford Wood Uline Scoring Machine Series No. 3.
1—Gifford Wood Uline Scoring Machine Series No. 5.
1—Gifford Wood four tier, ice tiering machine.
3—Gifford Wood Creasey Ice Crushers, Motor driven.
1500—11"x22"x49/50 Ice cans good condition.
666—11"x22"x49/50 ice cans, loose cans or 9-can grids.
1—Sheppard 2½ ton Crane, 9-can grid.
Brine coolers, double pipe 2" and horizontal 2".
Shell and tube type 1¼" and 2" ammonia coils approximately 10,000 Feet.
Send us your requirements on any equipment you may need.

**Enterprise Equipment Corporation**
77-79 Alexander St., Yonkers, N. Y.
**Phone: Yonkers 8-8118-9**

# USED ICE MACHINES AND EQUIPMENT

***All Used Equipment Is Reconditioned in Our Modern Machine Shop***

**THIS IS ONLY A PARTIAL LIST—WRITE ABOUT ANY REQUIREMENTS WHICH YOU HAVE WE ARE BUYING ADDITIONAL EQUIPMENT ALL OF THE TIME.**

**Compressors With or Without Motors**

| | Item No. |
|---|---|
| 1—4x4 York, 300 RPM | 16 |
| 6—6x6 York's, 200 RPM | 20 |
| 1—6x6 Frick, 257 RPM | 21 |
| 1—6x6 York, 400 RPM, forced-feed lubrication | 25 |
| 2—6½x6½ Arctics, 350 RPM, forced feed lub | 30 |
| 1—7¼x7¼ Baker, 350 RPM, forced feed lubrication | 35 |
| 1—7x7 Frick, 200 RPM | 40 |
| 1—7½x7½ York, 200 RPM | 51 |
| 2—7½x7½ Yorks, 350 RPM, forced-feed lubrication | 54 |
| 1—8x8 Frick, 400 RPM forced feed lub., V-belt wheel | 57 |
| 2—8x8 Yorks, 400 RPM, forced feed lub., V-belt wheels | 58 |
| 1—9x9 Arctic, 300 RPM, forced feed lub | 62 |
| 1—9x9 York, 200 RPM | 71 |
| 1—9x9 Worthington, 325 RPM, forced feed lub | 72 |
| 1—10x10 De La Vergne, 360 RPM, forced feed lub | 73 |
| 1—10x10 York, 257 RPM, forced feed lub | 80 |
| 1—10x10 Carbondale, 100 HP synch. motor, 350 RPM | 81 |
| 3—10x10 York's, 225 RPM, semi-forced feed lub | 82 |
| 1—11x13 York, 164 RPM, forced feed lub | 90 |
| 1—17x18 Frick, direct conn. 300 HP synch. motor | 91 |

**Diesel Driven and Diesel Engines**

1—8x8 York—Direct connected to 50 H.P. Fairbanks-Morse at 257 R.P.M. ..... 210

**Steam Driven**

1—8x8 Vertical York, 300 R.P.M. direct connected ..... 327

**Pipe**

10,000 feet wrought Iron pipe—2"—like new ..... 451

**Complete Ice Plants**

| | Item No. |
|---|---|
| 1—20 ton, 240 can, Diesel-driven plant | 626 |
| 1—15-ton electric driven plant | 630 |
| 1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new* | 631 |
| *Brand New 8 to 10-ton Clear Ice-Making Plants—110 Cans—Electric or Diesel Drive—2 Can Pull* | 632 |
| 1—*247 Can, 22-ton ice plants, like new* | 632A |
| 1—35-38 ton New Clear Ice Making Plants | 635 |

**Self-Contained Units**

| | |
|---|---|
| 3—4x4 York & Fricks | 742 |
| 1—5x5 York—390 R.P.M. | 743 |
| 1—4½x5 Lipman—360 R.P.M. | 744 |
| 1—3x3 Worthington | 748 |
| 1—5x5 Frick—Forced Feed—400 R.P.M. Latest Type | 758 |

**Brine Coolers**

| | |
|---|---|
| 1—34x10—100—2 | 802 |
| 1—48"x16'—130—2" tubes | 808 |

**Condensers**

| | |
|---|---|
| 3—100 ton shell and tube condensers retubed | 919 |
| 1—125-ton, Vertical Shell & Tube, 196 2" tubes | 921 |
| 1—120 ton, 216—2" retubed Vertical Shell & Tube | 922 |
| 2—20 ton Horizontal—retubed | 924 |

**Ice Cans**

150—11½"x22½"x44"—cap refinished in zinc
500—11"x22"x47"—ice cans

# NEW EQUIPMENT FOR IMMEDIATE DELIVERY

**Compressors With or Without Motors**

| | Item No. |
|---|---|
| 3x3 to 5 x 5 —390 R.P.M. | 1001 |
| 6x6 to 10x10—390 R.P.M. | 1002 |
| 3x3 to 5 x 5 —Self-contained units, complete | 1003 |
| 5x5—Self contained—15 H.P. motor—V Belt | 1004 |

**Ammonia Condensers**

| | |
|---|---|
| 4—12¾x12 Horizontal—36—1¼" tubes | 1020 |
| 2—30x14 Vertical 109—2" tubes | 1021 |
| 1—16"x10"x10' Shell and Tube Condenser, 60 1¼" tubes | 1022 |

**Ice Cans**

| | |
|---|---|
| 50—100 lb. cans—15½"x8"x31" | 1041 |
| 40—50 lb. cans—6"x12"x26" | 1042 |

**Ammonia Valves and Fittings**

| | Item No. |
|---|---|
| ⅜" to ¾"—Screwed Expansion Valves | 1050 |
| ¼" to 2"—Screwed Globe Valves | 1051 |
| 1" to 6"—Square Flanged Globe Valves | 1052 |
| Check Valves | 1053 |
| Relief Valves | 1054 |
| Strainers | 1055 |
| Steel & Malleable Fittings | 1056 |
| Extra heavy Ammonia Nipples | 1057 |

Ammonia Guages, Ammonia Receivers, Ice Crushers, Agitators, and Receivers and Oil Separators.

EASTERN REPRESENTATIVES OF PENGUIN AUTOMATIC ICE VENDING STATIONS

## Robert P. Kehoe Machinery Company, Inc.

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NIAGARA AEROPASS CONDENSER (Patented)

# Saves half the Engineer's Troubles ...with a Refrigeration Plant

Hundreds of engineers have been interviewed about their experience with the Niagara Aeropass Condenser. In one way or another, they say, "I wouldn't go back to anything else." And their managers, who watch the costs, say, "Best investment we ever made, couldn't operate now, without it."

Niagara Aeropass Condensers have three exclusive features which save trouble and money in running a refrigeration plant:

*The "Duo-Pass"— keeps scale and salts from crusting the coils, keeps the condenser always at full capacity.*

*The "Oilout"— removes oil and dirt from the refrigerant, at the exact point where the oil vapor is condensed and the refrigerant is not.*

*The "Balanced-Wet-Bulb" control gives automatic operation at the minimum head pressure, saving power cost the year 'round!*

In addition, the Niagara Aeropass Condenser saves nearly all your cost of cooling water, quickly bringing back to you the cost of installation. In plants where refrigeration is a production process, owners know that this condenser has reduced their costs.

*Write for Bulletin 103.*
*You can see one of these installations near you.*

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# ADVERTISERS INDEX

**Refer to Page 80 for Index Classified by Products**


Acme Industries, Inc. ..... 84
Acme Protection Equipment Co. ..... 80
Alco Valve Co. ..... 13
Armstrong Cork Co. ..... Inside Back Cover
Armstrong Machine Works ..... 67
Aurora Pump Co. ..... 82

Baker Refrigeration Corp. ..... 76
Barada & Page, Inc. ..... 12
Barrett Div., The Allied Chemical & Dye Corp. ..... 65
Bateman Foundry & Machine Co., Inc. ..... 71
Butcher Boy Cold Storage Door Co. ..... 14
Byers Co., A. M. ..... 2

Capital Elevator & Mfg. Co., The ..... 73
Caterpillar Tractor Co. ..... 1
Chemical Solvent Co. ..... 4
Chicago Nipple Mfg. Co. ..... 80
Classified Advertising ..... 85 and 86
Classified Trade Index ..... 80, 81, 82, 83, 84 and 85
Consolidated Products Co., Inc. ..... 86
Creamery Package Mfg. Co. ..... 15

Dersch, Gesswein & Neuert, Inc. ..... 81
Detroit Ice Machine Co. ..... 73
Dickinson & Co., F. B. ..... 65
du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept. ..... 63

Enterprise Equipment Corp. ..... 86

Frick Co. ..... 6

General Ozone Corp. ..... 71
Gifford-Wood Co. ..... 18
Greene, Van, R. H. ..... 79

Halsey Mfg. Co. ..... 71
Howe Ice Machine Co. ..... 61

Ice Plant Equipment Co., Inc. ..... 73
Index Coupon & Supply Co. ..... 73 and 83
Industrial Filter and Pump Mfg. Co., Inc. ..... 75
International Paper Co. ..... 7

Jamison Cold Storage Door Co. ..... Back Cover

Kehoe Machinery Company, Inc., Robert P. ..... 87
King Zeero Co., The ..... 69

Layne & Bowler, Inc. ..... 73
Link-Belt Co. ..... 83
Lilly Company, The ..... 77

Martocello & Co., Jos. A. ..... 8 and 78
Micron, Inc. ..... 71
Modern Refrigeration ..... 85
Moto-Truc Co., The ..... 16

National Pipe Bending Co. ..... 67
Niagara Blower Co. ..... 88

Ohio Galvanizing & Mfg. Co., The ..... 63
Ophuls & Associates, Fred ..... 79

Pacific Lumber Co., The ..... 5
Perfection Ice Scoring Machine Co. ..... 11
Philadelphia Pipe Bending Co. ..... 82
Phillips & Co., H. A. ..... 69
Pittsburgh Pipe Coil & Bending Co. ..... 84

Refrigeration Engineering Inc. ..... 67
Refrigeration Engineering Corp. (Reco Products Div.) ..... 79
Rempe Co. ..... 85
Rex Engineering & Sales Co. ..... 79
Reynolds Manufacturing Co. ..... 77
Roots-Connersville Blower Corp. ..... 81

S & S Vending Machine Co. ..... 65
Shank Co., Cyrus ..... 71
Solvay Sales Div., Allied Chemical & Dye Corp. ..... 61

Texas Co., The ..... Inside Front Cover
Towal Mfg. Co., Inc. ..... 69

Union Bag & Paper Corporation ..... 10
United Ice Supply Co. ..... 79

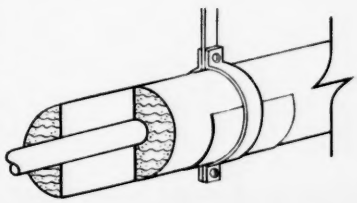
Vivian Manufacturing Co. ..... 79
Vogt Machine Co., Inc., Henry ..... 9
Voss Co., Inc., J. H. H. ..... 69

Wanted and For Sale Advertising ..... 86
York Corp. ..... 59

# What's wrong with this picture?

Here you see one reason why so many cold line insulation jobs are needlessly expensive. When a line is carried by small hangers just the size of the pipe, the workman will have to spend a lot of time cutting the covering to fit snugly around the hangers. Then he'll have to box in any part that extends beyond the covering, as well as insulate the hanger rod to prevent frost formation on the rod itself. Not only is this method time consuming, but it makes a good, moisture-resistant and airtight sealing job extremely difficult to obtain.

The right way is simply to use hangers large enough to fit around the insulation. Pipes can be supported by blocks of wood until the covering is applied. There's no cutting, no patching, no extra insulation and application time. Costs are reduced, and the insulation job will last longer and look better.



Armstrong's Cork Covering is strong and resilient, will readily support the weight of the piping if a simple sheet metal shield between hanger and covering is used to distribute the weight of the load.

Advice as to the best way to do any insulation job, hot or cold, is a free service of the engineers representing the Armstrong Cork Company. If you consult these men while your work is in the planning stage, they can often offer suggestions that will save you time and money. The complete contracting service they represent also brings you quality insulating materials and the services of skilled workmen to apply them. Call the Armstrong office nearest you or write to Armstrong Cork Company, 4507 Concord Street, Lancaster, Pa., the next time you have an insulation job in the offing.

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*cold storage doors in the world*

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